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Coping with Weight-Related Discrepancy and Potential Impacts on Future Self-Regulation of Weight Loss Behavior: Development of the WEIGHT-COPE

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by

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"I think I did pretty well, considering I started out with nothing but a bunch of blank paper." - Steve Martin

Coping with Weight-Related Discrepancy and Potential Impacts on Future Self-Regulation of Weight Loss Behavior: Development of the WEIGHTCOPE

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The University of Texas at Austin, 2011

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The purpose of this dissertation was to develop a reliable and valid measure to assess coping responses to weight-related discrepancy in women. The decision to create such a measure stemmed from the difficulties individuals have with initiation and consistent regulation of weight-related behavior. When salient, perceived discrepancies with one's weight or body can be emotionally laden, producing negative affective responses and discontent, labeled here as dissatisfaction. The individual must then find ways to cope. However, not all coping responses are equal, and are theorized to have varied impacts on future regulation of weight loss efforts. The present research addressed these issues by developing a theoretically-based measure, labeled the WEIGHT-COPE. The WEIGHT-COPE originally sought to capture healthy and unhealthy problem-focused coping efforts to lose weight, as well as approach and avoidance coping efforts theorized as more distal influences on problem-focused efforts. The WEIGHT-COPE and other relevant measures were completed by 470 females ages 18-35 years. Results of an exploratory factor analysis revealed a 38-item measure consisting of eight coping factors: Exercise/Physical Activity, Healthy Eating, Cutting Calories/Appetite Suppression, Supplement Use, Monitor/Planning, Disengage/Denial, Camouflage, and

Acceptance/Positive Reframing. All factors were internally consistent (α = 0.71 to 0.89), and converged with other pertinent measures of weight satisfaction, weight controllability/changeability, social physique anxiety, self-esteem, weight loss efficacy, physical activity level, dietary intake and objectified body consciousness. To test theoretical implications on future self-regulation of weight loss behavior, a structural regression model was run utilizing the WEIGHT-COPE factors. The factors were associated in a theoretically-driven pattern, illustrating that coping responses to weight-related discrepancy have varied impact on weight loss behavior choice. Thus, the present findings provide preliminary support for the WEIGHT-COPE and suggest that individuals cope with weight-related discrepancy in different ways, which may then have various impacts future self-regulation of weight loss behavior.

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Chapter I: Introduction

BACKGROUND

The purpose of this dissertation was to develop a reliable and valid measure to assess coping responses to weight-related body discrepancy in women. The decision to create such a measure stems from the difficulties in consistent regulation of weight-related behavior. When salient, perceived weight-related discrepancies can be emotionally laden, producing negative affective responses and discontent, labeled here as dissatisfaction. The individual may then find ways to cope. However, not all coping responses are equal, and are theorized to have varied impacts on future regulation of weight loss efforts. The proposed research addressed these issues by developing a theoretically-based measure, the WEIGHT-COPE. The WEIGHT-COPE initially sought to capture healthy and unhealthy problem-focused coping efforts to lose weight, as well as approach and avoidance coping efforts theorized as more distal influences on problem-focused efforts.

The present measure development was based on the notion that individuals *perceive* weight-related discrepancies. Though perceived, such discrepancies may be seen as real and accurate, thus capable of producing dissatisfaction that is honest to the individual's perception. As expanded on below, the perception of weight-related issues, such as excess weight, impacts women across the entire body size scale. In other words, even underweight and on-weight women may perceive salient weight-related discrepancies, then experience dissatisfaction with their weight, body size, fat levels, etc. Thus, terms, such as *discrepancy* or *excess weight,* were operationalized as perceived throughout the entirety of the present study. The present purpose

was not to determine if women are correct in these perceptions, or to determine proper cut-offs in weight (e.g. body mass index levels, body fat percentages) that allow for accurate perceptions of discrepancy or excess weight. Rather, the purpose of this study was to develop a measure to capture how women commonly cope with these perceived discrepancies, and not to determine whether or not these perceptions are correct or productive for the individual. As such, the WEIGHT-COPE would be useful in exploring future research questions on perceptual accuracies and correctness of coping choice.

WEIGHT-RELATED DISSATISFACTION

Weight-related dissatisfaction was defined in the present investigation as the emotional and/or psychological distress and disturbance (i.e. negative affectivity) stemming from perceived discrepancies associated with one's body weight. While the theoretical backdrop of perceived discrepancies are discussed in the next section, few studies have specifically examined dissatisfaction with weight. Available literature instead has focused on measures of a number of seemingly similar variables, including dissatisfaction in one's general body, body image, body size (i.e. drive for thinness), body shape, specific features of the body, and feeling fat. Though these variables are similar, there may be important differences in their impacts on dissatisfaction and subsequent behavioral efforts. For example, though there may be some overlap in behavioral choice, tactics to alter body weight may be different than those chosen to alter body shape, skin tone, fat levels, etc.

A substantial number of women (50%-83%) have been reported to be dissatisfied with their weight and/or bodies (Allaz et al., 1998; Cash & Henry, 1995; Frederick, Peplau, & Lever, 2006; McLaren & Kuh, 2004; Neighbors, Sobal, Liff, & Amiraian, 2008), even when they are not actually overweight (Allaz et al., 1998; Fitzgibbon, Blackmon, & Avellone, 2000; Kottke et

al., 2002; Navia et al., 2003). Neighbors and colleagues (2008), with a sample U.S. undergraduate females, found that up to 59% were utilizing an inappropriate weight management strategy (i.e. trying to lose weight when they were in a desired BMI category). Women are typically more dissatisfied with their weight than men, and concurrently hold a greater motivation than men to lose weight (Anderson et al., 2002; Davis & Cowles, 1991; Frederick, Peplau, & Lever, 2006; Green & Pritchard, 2003; Millstein et al., 2008). Ethnic differences in weight or body appear to be small (Forbes & Frederick, 2008; Frederick, Forbes, Grigorian, & Jarcho, 2007; Grabe & Hyde, 2006; Millstein et al., 2008), and may diminish further when determined by measures focused on weight only (Roberts, Cash, Feingold, & Johnson, 2006).

Though body dissatisfaction spans all ages (Millstein et al., 2008; Siegel, 2010; Tiggeman, 2004), the young female adult population (approximately 18-29 years of age) is commonly reported as a highly dissatisfied population with distorted body weight and shape views (Cohn & Adler, 1992; Neighbors & Sobal, 2007). This population also appears to hold greatest importance of body shape, body weight and appearance (Tiggemann, 2004), exhibit a greater evaluation of their body, alongside habitual appearance anxiety, appearance investment and self-monitoring (Cash, Morrow, Hrabosky, & Perry, 2004; Tiggemann & Lynch, 2001).

Similarly, this age range has shown significant body image change with daily situational factors (Rahimi, 2010). These situations may lead to the numerous coping responses hypothesized within the present study, especially those unique to weight- and body-related discrepancies, such as disordered eating and camouflaging with clothing. Both of these coping responses have been shown to increase with increases in body dissatisfaction in college women (Trautmann, Worthy & Lokken, 2007). Thus, this younger age range may hold the highest importance of body image, and with their high appearance anxiety and self-monitoring,

experience many events to create saliency to perceived weight-related discrepancies. These factors create an ideal population for initial exploration of common coping responses.

There is also indication that other risk factors exist for increased weight or body dissatisfaction, including internalization of societal and social influences (Thompson & Stice, 2001), financial affluence or social class (Mclarin & Kuh, 2004; McLarin & Gauvin, 2002), physical activity level (Green et al., 1997), self-esteem (Furnham, Badmin, & Sneade, 2002; Tiggemann, 2003), smoking behavior (McLarin & Kuh, 2004), self-objectification (Tiggemann & Lynch, 2001), fear of aging (Lewis & Cachelin, 2001), previous eating disorder history (McLarin & Kuh, 2004), and weight cycling history (Friedman, Schwartz, & Brownell, 1998).

Dissatisfaction has also been linked to distress, depressive symptoms, and other psychological consequences (Bearman, Presnell, Martinez, & Stice, 2006; Friedman & Brownell, 1995; Friedman et al., 2005; Sarwer, Thompson, & Cash, 2005; Schwartz & Brownell, 2004). Even the simple awareness of weight, body fat and associated discrepancy through common weight/body composition testing produces negative affective responses (Faries et al., 2011; Faries & Bartholomew, unpublished; Ogden & Evans, 1996). Such negative affectivity is related to the dissatisfaction with one's body, drives for thinness, depression, and eating disorders (Paa & Larson, 1998; Ricciardelli & McCabe, 2001; Sim & Zeman, 2005; Smith & Rieger, 2006; Wiederman & Pryor, 2000). There is suggestion that the emotional/affective responses are dynamic in nature, fluctuating with every new or returning experience (Paquette & Raine, 2004).

PERCEIVED WEIGHT-RELATED DISCREPANCY AND AFFECTIVE RESPONSE

According to both the model of self-regulation (Carver & Scheier, 2001) and the transactional model of coping (Lazarus & Folkman, 1987) this dissatisfaction is hypothesized to stem from awareness of a perceived weight- or body-related discrepancy about oneself. For

example, an individual may find at her annual doctor's visit that she has gained 10 pounds over the past year, or one may have come across an old picture where she weighed less than she currently does. The awareness to such a perceived discrepancy may then produce an affective response. Though complicated and not fully understood, affect is commonly expressed as either positive (PA) or negative (NA). In short, PA requires the perception that one can continue moving toward a goal; while NA is a strong motivator to try harder, give up or to change (Carver & Scheier, 2001).

This negative affectivity is also a strong predictor of weight loss efforts, and may correlate more closely with behavior than body mass index (Anderson et al., 2002; Heywood & McCabe, 2006; Latner, Wilson, Jackson, & Stunkard, 2009). In light of subsequent behavioral choice (see next section), negative affect may be the spark of emotion necessary to pursue weight loss behavior. Such sparks, or triggering events, for weight loss efforts have been cited in successful losers and maintainers of at least 10% of initial body weight for at least a one year (Wing & Phelan, 2005), with the highest percentage of women reporting an initial trigger to be emotional or ongoing discontent (Klem et al, 1997). However, not all women may need to lose weight, thus the negative affective response that stems from their perceived discrepancy may provide an unnecessary spark to lose weight in underweight or onweight women.

Perceived discrepancies and associated negative affectivity may also stem from the innate, cultural and psychosocial pressures to lose weight (Brownell, 1991; Jonason, 2007; Rodin, 1993; Singh & Young, 1995; Symons, 1995), alongside heavy promotion from the health and medical communities for weight loss. Excess weight is commonly seen as something that is controllable. Accordingly, overweight and obese individuals are seen as less attractive, less healthy, lazier and less motivated compared to their thinner counterparts (Schwartz, Vartanian,

Nosek, & Brownell, 2006; Tiggemann & Anesbury, 2000; Wang, Brownell, & Wadden, 2004; Yanover & Thompson, 2010). This bias moves beyond views from normal weight individuals, as overweight and obese individuals hold such views of their own in-group members.

The affective response can be better visualized within the model of self-regulation (Figure 1.1). An individual (*comparator*) must appraise the relationship between a perceived standard, goal or reference and their current status. Awareness of one's current status is provided by an *input*, such as a weight scale reading or an old photograph. The perceived *discrepancy* is then theorized to develop. The immediate affective response is conceptualized to occur after the comparator appraises the presence of a discrepancy, but before the comparator pursues behaviors (*output*) to deal the discrepancy, typically in the form of discrepancy reduction. The speed of discrepancy reduction and direction of the discrepancy (i.e. positive or negative), are also conceptualized to influence the intensity and valence of the affective response. The chosen behaviors or outputs are then theorized to have some impact on reducing the perceived discrepancy. The individual could then step back onto the weight scale (i.e. input) and determine if there was a reduction in their perceived discrepancy from the perceived standard. The loop is theorized to continue in this manner until there is no longer a perceived discrepancy.

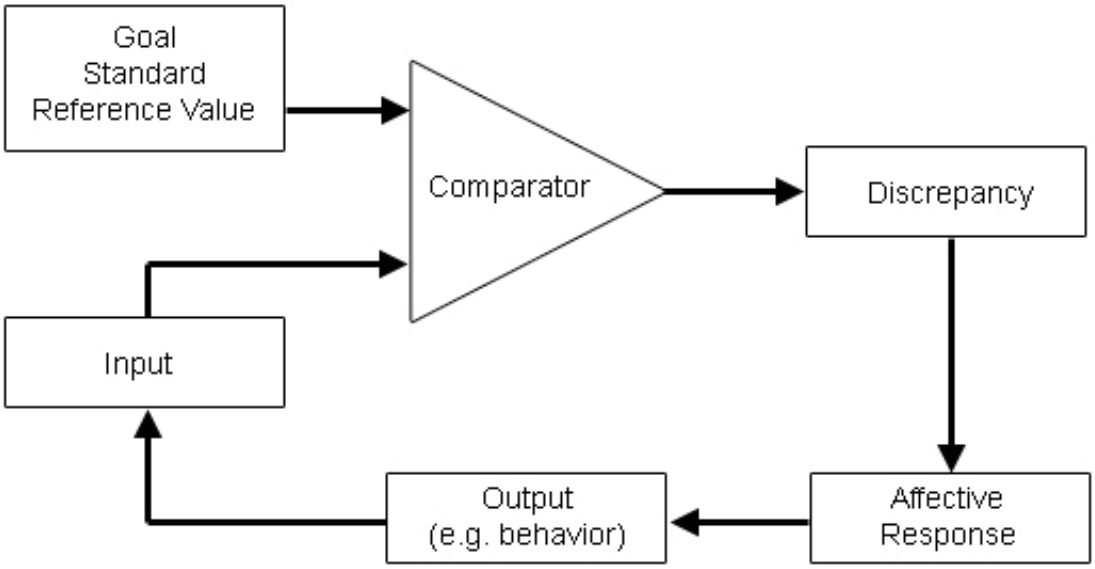

Figure 1.1: Schematic depiction of a feedback loop

Source: Modified from Carver & Scheier (2001)

Whether or not the affective response enhances or diminishes subsequent effort or engagement in behavior should be determined by the level and type of affect experienced (Carver & Scheier, 2001). As shown in Figure 1.2, various approach-related affects (i.e. to reduce discrepancy) supply an increase in effort, while other affects diminish subsequent effort. The more negative or positive the affects become, the more diminished effort becomes. For example, two women could both lose 3 pounds six weeks after joining the same weight loss class. However, these women could experience completely different affective responses. One could feel *eager* due to her progress in losing weight, which may translate to increase weight loss efforts. The second woman may be *sad* that she only lost 3 pounds after 6 weeks of effort, resulting in her giving up her efforts to lose the rest of her weight completely or at least through

the weight loss class. Therefore, experience of NA can be the driving force behind behavioral effort (enhanced or diminished) and choice following salient weight-related discrepancy.

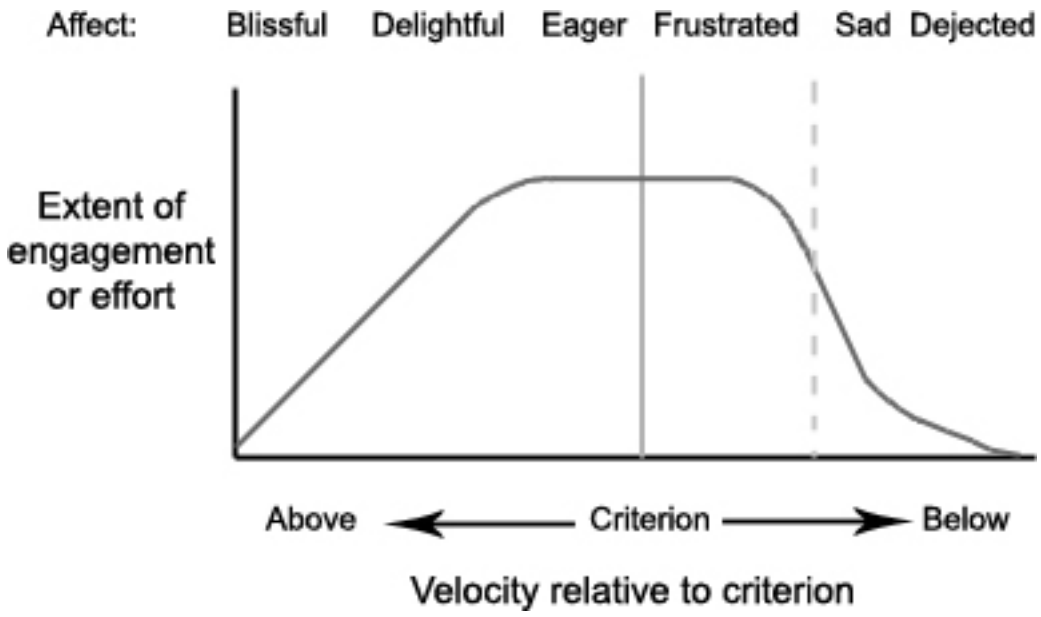

Figure 1.2: Approach-related affects (doing well vs. doing poorly)

Source: Recreated from Carver & Scheier (2001)

OUTPUT BEHAVIORS

Although potentially behavior enhancing, negative affect stemming from weight-related discrepancy can produce both positive (i.e. healthy) and negative (i.e. unhealthy) weight loss behavioral outcomes. On the positive note, negative affect could drive motivation to both dietary modification and exercise behaviors, which are recommended for successful, healthy weight loss and maintenance in overweight or obese individuals (Blair, 1993; Donnelly et al., 2009). Accordingly, the majority of those successful with long-term weight loss and maintenance

achieve energy deficits with dietary intake modification and physical activity (Elfhag & Rossner, 2005; Kayman, Bruvold, & Stern, 1990; Klem et al., 1997).

In contrast, individuals may also be inclined to deal with their weight through unhealthy weight-control behaviors, decreased motivation, psychological and behavioral avoidance, or hindered emotional regulation (Allaz et al., 1998; Heatherton & Baumeister, 1991; Neumark-Sztainer et al., 2006; Schwartz & Brownell, 2004; Teixeira et al., 2006). It is not uncommon that other, unhealthy weight loss behaviors are pursued in all weight and body size classifications (French & Jeffery, 1994; Lindeman, 1999). These include cosmetic surgery, excessive dietary restraint, excessive exercise, supplement/diet pill use (Field et al., 2005; Kruger et al., 2004; Neumark-Sztainer et al., 1996), skipping meals (Kruger et al., 2004; Tyler, Allan, & Alcozer, 1997), fasting (Serdula et al., 1994), laxatives and vomiting (Neumark-Sztainer et al., 1996), commercial diet products and fad diets (Tyler, Allan, & Alcozer, 1997), or initiation and continuation of smoking (Potter et al., 2004; White, McKee, & O'Malley, 2007).

In addition, monitoring and associated negative affective responses may promote slacking or disengagement from behavioral efforts. Escape theory states that such saliency can promote psychological and behavioral avoidance of goal pursuits (Duval & Wicklund, 1972; Heatherton & Baumeister, 1991). Individuals of all body sizes may also decide to deal or cope with the negative feelings, without any behavioral efforts to manage weight. For example, Neighbors and colleagues (2008) found that 41%-43% of their sample of undergraduate females of all weight classifications was not taking any action to manage their weight. These findings help reiterate that avoidance of weight management can occur in all weight categories. Similarly, McLaren & Kuh (2004) found that as body dissatisfaction increased in females, so did avoidance behaviors from social situations, public changing rooms, bathing suits, physical

activity and physical intimacy. It may be up for debate whether such disengagement is positive or negative, which could vary with individual and group differences.

As illustrated, not all output responses that stem from the affective response to a discrepancy are created equal. Individuals could choose from an array of behaviors to deal with the discrepancy (e.g. exercise, dietary control, cutting calories, appetite suppression, supplementation, avoidance, etc). These differences in outcomes suggest differences in the coping response, and may be better conceptualized by the transactional model of stress and coping.

COPING WITH WEIGHT-RELATED DISCREPANCIES

In the transactional model of stress and coping (Folkman & Lazarus, 1985; Folkman et al., 1986; Lazarus, 1993; Lazarus & Folkman, 1987), primary appraisal of a perceived discrepancy can lead to problem-focused and/or emotion-focused coping. Problem-focused coping refers to behaviors that are perceived to change the relationship between the person and the present environment by reducing the cause of the stressor or problem. The problem-focused responses of interest in the present study are those that are sought to decrease the perceived excess weight (i.e. weight loss behaviors), thus reducing the discrepancy perceived by the individual. Emotion-focused coping refers to behaviors that are perceived to regulate the emotional distress that stems from the perceived discrepancy, such as disengagement, denial, acceptance, and positive reframing. For example, individuals could disengage from or avoid situations that make them think about their weight, such as avoiding stepping on a scale, avoiding being physically active in public, or giving up on attempts to eat healthfully. Denial may include someone pretending that the weight-related situation is not even happening, while acceptance may lead an individual to accept their weight and themselves as who they are.

Positive reframing could be helpful, as an individual could try to see the weight-discrepancy in a more positive light, perhaps seeing good in the situation in order to fuel further problem-focused action. Also, for most healthy weight women who merely perceive the excess weight, the best outcome may be to positively reframe or accept the situation so as to disengage from the monitoring process.

Figure 1.3 is a schematic interpretation of the transactional stress and coping response. The individual (comparator) has just become aware of the discrepancy. Serving as a stressor, the individual then appraises the stressor and resources in order to choose the proper coping response (cognitive appraisal). The next step would be an affective response and stress, which must be coped with. As stated, this model theorizes that the individual would then enact problem-focused coping responses to reduce the discrepancy and/or emotion-focused coping responses to deal with the affective responses and stress the perceived discrepancy has produced.

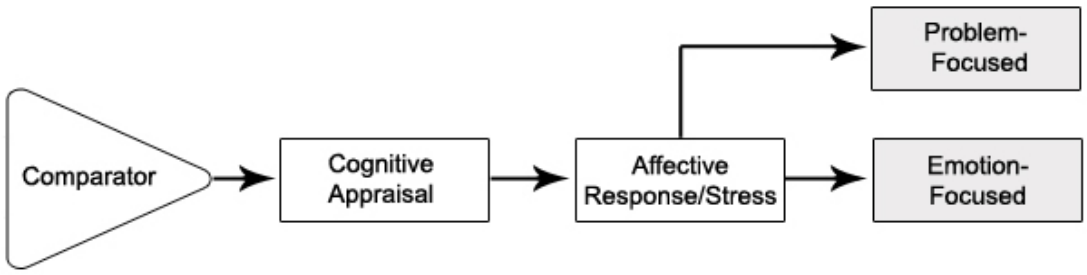

Figure 1.3: Schematic depiction of Transactional Model of Stress & Coping

From a general coping view, those who enact proper, more active coping responses to demands of life and difficulties in weight loss behavior (e.g. exercise, dietary control, seeking instrumental social support, problem solving, and directly confronting problems) are more successful in weight loss (Drapkin, Wing & Shiffman, 1995; Elfhag & Rossner, 2005; Kayman,

Bruvold, & Stern, 1990; Klem et al., 1997). However, there is little evidence on how individuals cope specifically with weight-related discrepancies and the resultant distress/affect, and how this coping response affects future engagement in weight loss behavior.

Thus, a measure was needed to address the theoretical confluence with the model of self-regulation and the transactional model of stress and coping, to better elucidate how individuals cope with common weight-related discrepancies, while also considering how coping responses impact subsequent motivation (and regulation) in weight loss efforts and behaviors. The WEIGHT-COPE measure sought to address these needs.

CURRENT COPING MEASURES

Several coping scales have been published related to body weight including: Ways of Coping measure (Folkman & Lazarus, 1985), the Brief COPE (Carver, 1997), and the Body Image Coping Strategies Inventory (BICSI; Cash et al., 2005). The Ways of Coping and the Brief COPE are more general in nature, thus are not worded to capture the specific behaviors associated with coping with weight-related dissatisfaction, which was an important focus of the present investigation. However, these widely-used and validated measures do provide insight to how women may generally cope, thus potential overlap between general coping responses and the specific responses to weight-related dissatisfaction (e.g. emotional avoidance, positive reframing, disengagement, venting, acceptance, etc.).

The BICSI is more specific than the Ways of Coping and Brief COPE, and is geared toward measuring coping strategies that stem from threats to body image. Body image is referred to as the thoughts and feelings associated with one's own physical appearance. Body weight may be included in physical appearance, but appearance is not limited to weight. For example, physical appearance may include body shape, body/facial features, hair/skin color and

texture, or muscle tonality. Thus certain behaviors may or may not be appropriate for coping with weight-related dissatisfaction specifically. BICSI proposes a three-factor structure including Appearance Fixing, Positive Rational Acceptance and Avoidance, which to some degree were proposed to exist within the WEIGHT-COPE.

However, and perhaps most importantly, the above measures were limited in their ability to capture a number of common coping behaviors previously discussed, such as physical activity/exercise, healthy eating, cutting calories, suppressing appetite, supplement use, denial of weight, monitoring of weight and weight loss behaviors, or planning to influence future weight loss behavior. Also, other than brief touches to self-regulation in the Brief COPE, the measures are not focused on future regulation of weight-loss behaviors. Thus, upon review, these measures were helpful, but fell short of being able to answer the present research questions.

WEIGHT-COPE DEVELOPMENT: A THEORETICAL APPROACH

To this end, a theoretical approach to scale development was utilized, rather than an empirical one (Carver, Scheier, & Weintraub, 1989). The theoretical approach allows theory to drive the content of the measure, rather than allowing statistical analysis to fully derive measure content and structure. Both the transactional model of coping (Folkman & Lazarus, 1985; Folkman et al., 1986) and the behavioral self-regulation model (Carver & Scheier, 1981, 2001) were utilized as theoretical guides for WEIGHT-COPE development. As previously illustrated, the self-regulation model posits that regulation of behavior acts within a feedback mechanism. The affective response provides feedback on how well one is doing in reducing or enlarging the discrepancy, which, in turn, motivates future behavior (i.e. output behaviors, Figure 1.1). However, as the earlier literature also illustrates, these behaviors can take many forms. The transactional coping model allows for further analysis and specification of these output

behavioral efforts (e.g. problem-focused vs. emotion-focused), while in turn, the self-regulation model allows for implications of coping choice in future weight loss efforts (e.g. enhance vs. diminish).

Thus, two major considerations arose in accordance with the development of the WEIGHT-COPE. First, how do individuals cope with weight-related discrepancies? While all forms of weight loss behaviors would be problem-focused coping, there are positive and negative options (i.e. healthy vs. unhealthy, respectively). A scale to measure such constructs should include both positive and negative problem-focused coping.

The second major consideration in the WEIGHT-COPE development addressed was - which coping responses were theorized to lead to engagement *or* disengagement of weight loss behavior? As mentioned, rather than pursuing weight loss behaviors, individuals of all body sizes could enact emotion-focused forms of coping. These coping responses are conceptualized as distal from the perceived problem (e.g. distraction or venting). A unique example within weight-related dissatisfaction is the use of camouflaging behaviors. These behaviors are directed at covering up, hiding, or disguising the body, usually with clothing. Such tactics can give the illusion of decreased body size, body fat, and improved body shape, and women may be turning to clothing to enhance mood, or to lessen negative mood states and self-consciousness (Kwon, 1991; Kwon & Shim, 1999). In light of self-regulation theory, camouflage behaviors could allow for an individual to temporarily avoid discrepancy, remove monitoring, and thus potentially halt regulation of their weight loss behavior. Emotion-focused coping can enhance problem-focused coping (i.e. approach) or diminish/distract problem-focused coping (i.e. avoidance) (e.g. Carver, Scheier, & Weintraub, 1989).

Based on these considerations, a theoretically derived 4-factor structure was first investigated to capture common coping responses to weight-related dissatisfaction/affect in women (Figure 1.4). Problem-focused behaviors that produce a reduction in weight were theorized to exist in separate dimensions. *Positive problem-focused coping* (PFC+) represented active behaviors that may reduce weight, and hold a concurrent positive relationship to health (e.g. exercise, monitoring, healthy eating). *Negative problem-focused coping* (PFC–) represented active behaviors that may reduce weight, but are considered to be negative health behaviors (e.g. skipping meals and suppressing appetite). The final two factors: *Approach coping* and *Avoidance coping*, were comprised of mostly emotion-based coping, reappraisal responses and actions that were theorized to either enhance or diminish future active problem-focused/weight-loss efforts, respectively.

In addition, coping is a process and is influenced by perceptual views, situational factors and temporal flux (Lazarus & Folkman, 1987). Perceptual views may include an individual's appraisal that the weight-related distress promotes a challenge versus a threat. Situational factors and appraisals indicate that the impact of the distress will vary with the specific situation or circumstance. Similarly, such impacts and subsequent coping responses may vary over time. Due to the impact of temporal, situation and dispositional factors on weight-related distresses and coping, future research questions would benefit from a scale that could be utilized to capture both. Therefore, the WEIGHT-COPE items were developed, so that they may be used with varied instructions able to capture either dispositional or situational coping responses. To this end, the items remain the same, but the frame of reference can be altered from what one *usually does* (dispositional) to what one *has done* or *currently doing* in a specific occurrence or period of time (situational; see Carver, Scheier, & Weintraub, 1989).

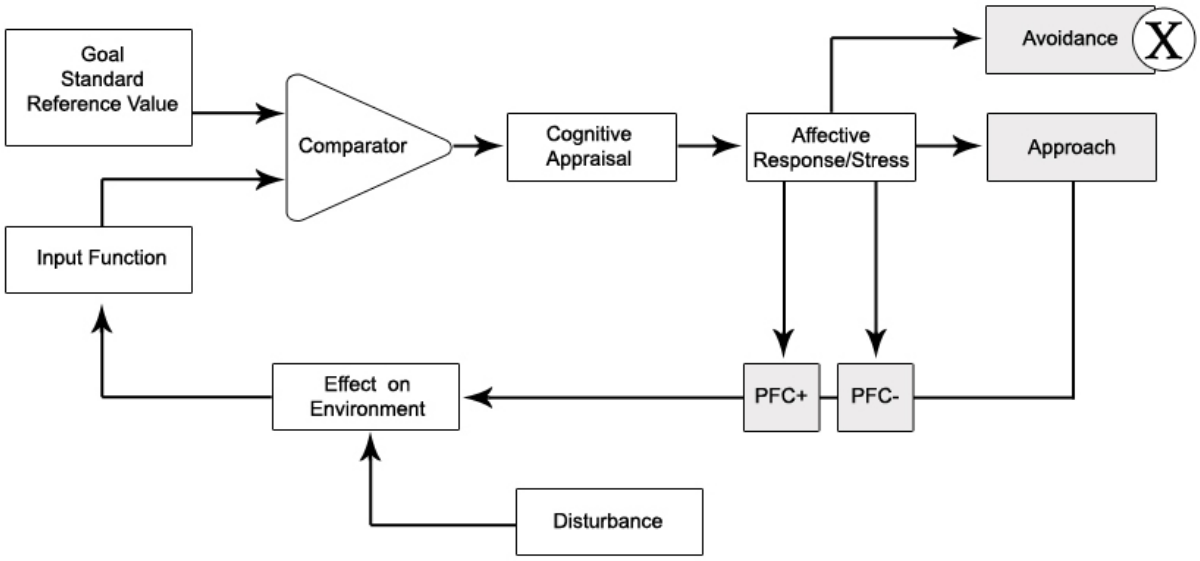

Figure 1.4: Schematic depiction of the WEIGHT-COPE

Derived of both the self-regulation feedback loop and the transactional model of stress and coping. PFC+ = problem-focused coping (weight loss) behaviors that are also considered healthy behaviors. PFC– = problem-focused coping (weight loss) behaviors that are also considered unhealthy behaviors.

AIMS

Aim 1: Utilize confirmatory factor analysis (CFA) to confirm hypothesized 4-factor structure and establish the best measurement model through model trimming (if needed). This model was used as a guide, however other factor structures were examined beyond the hypothesized 4-factor structure.

(a) Determine measurement reliability for each factor and the entire scale (Cronbach's alpha).

(b) Determine validity of factors with other relevant constructs.

(c) Confirm correlations (if any) among factors and discriminant validity between factors.

Aim 2: Utilize correlations to examine relationships of Approach and Avoidance factors with problem-focused factors (PFC+ and PFC–).

HYPOTHESES

H1: The CFA will provide acceptable fit of the proposed 4-factor model, as determined by factors loadings (>0.30) and model fit indicators. Model fit indices (i.e. model chi-square, root mean square error of approximation [RMSEA], comparative fit index [CFI], and standardized root mean square residual [SRMR]).

H2: Factor Correlations:

(a) Both the PFC+ and PFC– factors will be positively correlated to the Approach factor.

(b) Both the PFC+ and PFC– factors will be uncorrelated to the Avoidance Factor.

(c) The Approach and Avoidance factors will be uncorrelated.

H3: Factors will correlate with other relevant constructs as illustrated in the following table.

	PFC+	PFC-	Approach	Avoidance
OBC: Control Beliefs	+	-	+	-
OBC: Body Shame	-	+	-	+
OBC: Surveillance	+	+	+	-
Body Dissatisfaction	+	+	+	+
Self-Esteem	+	-	-	-
Social Physique Anxiety	-	-	-	+
Wt Control/Changeability	+	+	+	-
Wt Loss Difficulty	-	+	-	+
Wt Cycling	-	+	-	+
Self-Efficacy (PA & Eating)	+	-	+	-
Physical Activity	+	-	+	-
Dietary Recall	+	-	+	-
BMI	-	-	-	+

NOTE: "+" = positive correlation; "-" = negative or no correlation

DEFINITION OF TERMS

- *Affect* - a general feeling quality, a sense of positiveness or negativeness (Carver & Scheier, 1990).
- *Approach Coping* - emotional-focused coping responses to weight-related dissatisfaction, which are theorized to enhance subsequent engagement in problem-focused coping.
- *Avoidance Coping* - emotional-focused coping responses to weight-related dissatisfaction, and are theorized to diminish subsequent engagement in problem-focused coping.
- *Attractiveness* - the perceived level of physical appearance.
- *Camouflage* - behaviors that are utilized to disguise, cover up, hide or conceal one's weight or fat, either as a whole body or specific body part tactic.
- *Discrepancy* - the perceived difference between a held standard, goal or reference value, and one's present state (Carver & Scheier, 1990).

- *Drive for Thinness* - motivation to be thinner, which may stem from pressures and concerns with body shape and weight.
- *Emotion-Focused Coping* - behaviors that are perceived to handle or regulate the present emotional distress (Lazarus & Folkman, 1987).
- *Health* is defined here as the absence of disease and disease risk (e.g. high blood pressure, diabetes, cardiovascular disease, cancer) or level of psychological functioning and wellness.
- *Physical Function* - the self-perceived ability to do work and physically function at a desired level, which can vary from abilities to perform activities of daily living to higher level fitness outcomes (e.g. cardiovascular fitness, strength, flexibility).
- *Problem-Focused Coping* - behaviors that are perceived to alter or change the relationship that exists between the troubled person and the environment (Lazarus & Folkman, 1987).
- *Problem-Focused Coping (Negative)* - behaviors that have the ability to reduce weight, but are not considered healthy (e.g. appetite suppression, extreme cutting of calories, dieting).
- *Problem-Focused Coping (Positive)* - behaviors that have the ability to reduce weight, while also considered healthy (e.g. exercise, physical activity, healthy food choices).
- *Salience* - the index of the effectiveness of the stimulus (APA Dictionary of Psychology). Specifically, the stimulus (e.g. discrepancy) becomes meaningful, important, noticeable or prominent at a given time.
- *Self-esteem* – an overall sense of worthiness as a person (Rosenberg, 1979).

- *Self-regulation* - the purposeful influence over one's own motivation and behavior (Carver & Scheier, 2001).
- *Weight-Related Discrepancy* - the perceived discrepancy that is specific to weight, fat or body related standards.
- *Weight-Related Dissatisfaction* - the emotional and/or psychological distress and disturbance (i.e. negative affectivity) stemming from perceived discrepancy with factors associated with one's weight.
- *Weight-Related Distress* is high dissatisfaction with weight that may be accompanied by psychological concerns, such as lowered self-esteem (Walker, 1998).

DELIMITATIONS

Validation of the WEIGHT-COPE is indicative of the current sample and not of other populations. The main objective of the present study was to establish the best factor structure of coping responses, which may limit the scope of application.

The WEIGHT-COPE is also delimited by use of the specific items utilized in the measure. The goal was to assess a wide-range of possible coping mechanisms, especially within the Approach and Avoidance coping factors. Despite these efforts, the choice and wording of items may impact generalizability. These concerns were considered during the model trimming process of the confirmatory factor analysis.

Similarly, the present study was limited to two theories, the transactional model of stress and coping and self-regulation theory. Delimiting to these two leaves out other theories of behavior that may influence coping responses to weight dissatisfaction, such as theory of planned behavior and self-determination theory (e.g. Schifter & Ajzen, 1985; Williams, Grow, Freedman, Ryan, & Deci, 1996, respectively). However, the WEIGHT-COPE allows for future research to explore potential mediating and moderating effects of variables within these theories.

Finally, there is potential that there were reactive effects within participants by answering the survey for experimental purposes. Weight-related issues are sensitive topics and a measure guiding participants to thoughts of their own discrepancy might produce emotional responses. This reactivity, if present, may have impacted participants' responses (e.g. Jacomb et al., 1999), such as answering as to how they *should* be responding opposed to how they do respond. Similarly, such reactivity may steer individuals to over-estimate certain effects and/or reactions to these weight-related concerns.

SIGNIFICANCE OF THE STUDY

The present study was a novel attempt to measure responses to perceived weight-related discrepancies. Through theoretical development, these responses were useful extensions of existing work in stress, coping, self-regulation and weight loss behavior. Coping is considered a process which could change according to the person-environment interactions during a stressful encounter (Lazarus & Folkman, 1987). The WEIGHT-COPE can provide a productive means to examine how coping behaviors vary across different encounters or weight loss scenarios. The WEIGHT-COPE also may provide insight into how women of all body sizes are coping specifically with weight-related discrepancies, and not necessarily forms of body-related dissatisfaction. Similarly, varied affective responses to discrepancy could provide situational differences in coping responses and effort (Carver & Scheier, 1981, 2001). The WEIGHT-COPE could also be a viable pre/post measure for weight loss related studies. Future intervention strategies could then be developed to improve the way that people cope with discrepancies, allowing them to continue movement toward goals. In addition, this study may shed light on the impact both individual counseling and interviewing.

Chapter II: Literature Review

Weight-Related Body Dissatisfaction

A substantial number of women (50%-80%) have been found to be dissatisfied with their bodies and weight (Allaz et al., 1998; Cash & Henry, 1995; Frederick, Peplau, & Lever, 2006; McLaren & Kuh, 2004) – a feeling that appears to be remaining stable over time (Cash, Morrow, Hrabosky, & Perry, 2004; Neighbors, Sobal, Liff & Aminraian, 2008). Cash and Henry (1995) have conducted a large survey on body dissatisfaction of women in the United States (n=803). This study utilized a multidimensional body-self relations questionnaire to measure body dissatisfaction. Results suggest that nearly one-half of the sample experience body dissatisfaction. A survey study in Iceland found similar results, with 50% of women dissatisfied with their weight. There are few studies that specifically aim to measure weight dissatisfaction instead of general body dissatisfaction (Al Sabbah et al., 2009; Matthiasdottir, Jonsson, & Kristjansson, 2010), but have results that mirror the results of the body image dissatisfaction surveys. Thus, in women, it may be assumed that general body dissatisfaction is related to weight dissatisfaction. No study to the author's knowledge has determined any differences in weight versus body dissatisfaction. As stated earlier, there could be important differences in distress and subsequent coping choice.

Frederick and colleagues (2006) utilized an online survey to capture 26,983 women and their body dissatisfaction. The prevalence of body dissatisfaction reached 61% of all women surveyed, with only 2% reporting they were "too thin". This level of dissatisfaction remained consistent across all ages (18-65), ranging from 61% feeling "too heavy" in 18-34 age group, 62% in 35-49 age group, and 58% in the 50-65 age group. The percentage of women feeling too heavy or unattractive was higher with higher BMI. Specifically, 96% of those in the obese

category felt they were too heavy, with 87%-94% feeling too heavy with overweight women, 66% in upper healthy BMI range, 31% in lower healthy BMI range, and 11%-12% in the underweight BMI category.

Tiggemann and Lynch (2001) investigated prevalence of body image across a cross-section of 322 women ages 20-84 in Australia. This study provided insight into the prevalence of dissatisfaction across a large age range. Specifically, the authors found that body dissatisfaction, defined as the discrepancy between their current and ideal body, did not change with age, nor did levels of body shame. Interestingly, this study also found direct effects of habitual monitoring and indirect effects of self-objectification on body dissatisfaction. Other studies provide support that body dissatisfaction can span all ages (Millstein et al., 2008; Siegel, 2010; Tiggeman, 2004).

For example, Neighbors and colleagues (2008) investigated body dissatisfaction in two cross-sectional U.S. female undergraduate populations in 1990 and 2005 (n=512 & 536, respectively). These findings indicated that the majority of women wanted to lose weight, with similar levels of weight discrepancy from both years. Specifically, 83% of both the 1990 and 2005 sample wanted to lose weight, with 82-83% of the women reported some level of dissatisfaction with their weight. This study also examined what weight management strategy was taking place in the sample. Forty-one percent to 43% were not taking any action. Overall, 54%-57% were trying to lose weight.

Women are typically more dissatisfied with their weight than men, and concurrently hold a greater motivation than men to lose weight and/or be thinner (Anderson et al., 2002; Davis & Cowles, 1991; Harris, Waschull, & Walters, 1990; Millstein et al., 2008). This dissatisfaction appears to occur even when they are not actually overweight (Fitzgibbon, Blackmon, & Avellone

2000; Kjaerbye-Thygesen, Munk, Ottesen, & Krüger Kjaer, 2004; Kottke et al., 2002; Matthiasdottir, Jonsson, & Kristjansson, 2010; Navia et al., 2003). Matthiasdottir and colleagues (2010) noted 64% of women in the normal range of BMI believed that they needed to lose weight. Kjaerby-Thygesen and colleagues (2004) polled 11,905 low BMI adult women (18.5-21 $kg \cdot m^{-2}$), and found that even 10% of these, low weight women considered their weight to be too heavy. Similarly, college women have been shown to select an ideal (most attractive) body figure that is thinner than the figure that they feel is most desirable by male peers (Cohn & Adler, 1992). Neighbors and colleagues found that 54%-59% of their sample who were in a normal-desire BMI range were trying to lose weight.

Research on the ethnic differences in body/weight dissatisfaction has found mixed results. Anglo and Hispanic women have been found to be more dissatisfied than African American women (Cash & Henry, 1995). However, no differences have also been cited, with suggestion that ethnic differences involve complex interactions of several variables, such as social class and/or social pressures (Caldwell, Brownell, & Wilfley, 1997; Powell & Kahn, 1995).

The dissatisfaction from excess weight has negative implications and has been associated with distress, lowered self-esteem, depressive symptoms, and other psychological consequences (Bearman, Presnell, Martinez, & Stice, 2006; Elfhag, Rossner, & Carlsson, 2004; Friedman & Brownell, 1995; Furnham, Badmin, & Sneade, 2002; Sarwer, Thompson, & Cash, 2005; Schwartz & Brownell, 2004; Van der Merwe, 2007). Despite these consequences, body dissatisfaction can be a strong predictor of weight loss efforts in overweight and obese women (Anderson et al., 2002), and perhaps a stronger correlate to behavior than body size (Heywood & McCabe, 2006).

The potential power of this dissatisfaction and weight concern has been previously illustrated by the staggering attitudes reported toward excess weight. Schwartz and colleagues (2006) found that 46% of survey respondents (n=4283; 83% women, 85% white) reported that they would be willing to give up one year of their life rather than to be obese, while 15% were willing to give up 10 years or more of their life. Those considered to be normal weight or underweight, reported even greater willingness to give up years of their life, with up to 22% willing to lose a limb rather than be obese. Recent work suggests that body size and internalization of appearance standards predict the extent to which one will actually put their health at risk to lose weight (Blow et al., 2010). These results provide further support that weight-related discrepancies, though perceived, may promote dissatisfaction and motivation for weight loss across all weight-categories.

ORIGINS OF WEIGHT-RELATED DISCREPANCY & DISSATISFACTION

The literature supports a complex and concurrent relationship of innate, cultural, and psychosocial pressures to lose weight (Brownell, 1991; Jonason, 2007; Lavine, Sweeney, & Wagner, 1999; Paquette & Raine, 2004; Powell & Kahn, 1999; Rodin, 1993; Singh & Young, 1995; Symons, 1995; Tovée, et al., 2002), alongside heavy promotion from the health and medical communities for weight loss. These experiences appear to be more dynamic in nature, fluctuating with new and/or returning experiences (Paquette & Raine, 2004).

The relationships with body dissatisfaction are also extremely complex (Schwartz & Brownell, 2004), and the motivation to lose weight can exist with and without body dissatisfaction. For example, teenage girls reported that they definitely wanted to be thinner, but this did not necessarily mean they were dissatisfied with their bodies (Tiggemann, Gardiner, & Slater, 2000). However, as will be discussed later, dissatisfaction may also include the

situational negative affective responses to discrepancy, and not just dispositional feelings of dissatisfaction. These complexities and mixed relationships are beyond the scope of the present review (see Schwartz & Brownell, 2004), but suffice it say that body and weight dissatisfaction are separate but overlapping constructs and appear to be a common challenge facing women.

Weight loss is a highly sought after goal. Americans have been estimated to spend over $33 billion each year on weight-loss products and services (Kruger et al., 2004). These efforts are not limited to just the overweight or obese (Davis & Cowles, 1991; Kottke et al., 2002; Navia et al., 2003; Serdula et al., 1993). Recent literature suggests that approximately 50% - 60% of women are trying to lose weight, with these numbers increasing with body mass index (BMI) and decreasing slightly at ≥70 years of age (Field, Aneja, & Rosner, 2007; Kottke et al., 2002; Weiss, Galuska, Khan & Serdula, 2006). As many as 85% of women are trying to lose weight, not gain weight and/or actively trying maintain weight.

HIERARCHICAL STRUCTURE OF WEIGHT-RELATED GOALS

The influences on women to lose weight or be thinner is internalized (e.g. Thompson & Stice, 2001) and can, in turn, make up an important part of one's ideal self. Goals tied to the self (i.e. closer meaning and relationship) are thought to exist in a hierarchical structure of abstraction from general principles to behaviors (Powers, 1973; Rasmussen et al., 2006). Within each individual's ideal self, there are certain sets of principles that drive whom a person wants to be. These principles, sometimes labeled "Be Goals" or "Principles" exist as goals (e.g. being healthy, being kind), but are abstract in nature. The hierarchical structure allows for these principles to drive the next level goal (i.e. Do Goals or Programs), which is less of an abstraction and so on until we reach a set of general behaviors at the motor control level (i.e. Sequences or Action Goals) that coincide with each, initial principle.

The hierarchical structure of goals is pertinent to self-regulation and feedback processes, as upper levels of the hierarchy provide reference values to the levels below. First, goals at higher levels hold more importance, perhaps due to its closer meaning and relationship to the self (Rasmussen et al., 2006). Secondly, because goals at the action level are merely an end to achieve a higher-level goal, they vary in level of importance amongst people and across situations. For example, being healthy may involve weight loss, gut also eating ample fruits and vegetables, taking vitamins or regular doctor visits. The importance or value of certain behaviors is thought to subsequently impact evaluations of the self and one's resulting affective state (Bandura, 1991). As discussed in the realm of self-regulatory feedback systems (Carver & Scheier, 2001), affective responses are theorized to provide feedback on how well we are doing in reducing or enlarging salient discrepancies. Thus, behavioral attainment in those behaviors of higher importance produces greater satisfaction, success and the sense of efficacy; and attainment (or not) of more meaningful goals that are tied to the self should aid in future regulation of behavior.

Individuals who pursue more healthy behaviors, or at least opt against placing their health at risk to lose weight, may hold a greater meaning of health to a higher level of goal abstraction. In other words, if being healthy is important to one's self, then one may not enact action goals or behaviors to lose weight contrary to their goal to be healthy. On the other hand, individuals who do not hold health as a higher-level goal may be more willing to enact unhealthy behaviors. For example, men appear to relate body weight to health-related quality of life (HRQOL) more than women (Bish et al., 2007). Women with poorer perceived HRQOL are less likely to try to lose weight. The authors conclude that men may link their body weight to poor health. It is possible

that women may link their to higher-level goals other than health, such as physical functioning or physical attractiveness, which may make more unhealthy coping more likely.

Previous research has not attempted to discern the higher order, weight loss-related goals. Particular events are thought to trigger a salient discrepancy in these higher-level goals (i.e. medical/health triggers; image-related triggers). Some triggers may be more successful in weight loss and weight regain prevention (Gorin et al., 2004; Visram, Crosland, & Cording, 2009). These triggers could create discrepancies at one's higher goal level, which would in turn drive output behaviors to aid in reducing the discrepancy in weight. More is known about the impact of weight loss on higher-order principles. The most common variables exhibiting positive change after weight loss are health perceptions, physical function, self-esteem, sexual life, social/public distress, mental health, and vitality (Fontaine et al., 1999; Kolotkin et al., 2001; Mathias et al., 1997; Rippe et al., 1998; Samsa et al., 2001). Each of these may serve as a trigger for weight loss and will be outlined in more detail below.

Health

Weight has been tied to health status (Adams et al., 2006; Flegal et al., 2005; Manson et al., 1995; Mokdad et al., 2003). Satisfaction with body weight is associated with lower BMI, greater age and a better self-rated level of health (Anderson et al., 2002). As such, it is reasonable to assume that individuals will associate weight change to their own health status. Unfortunately, people are not necessarily accurate at stating if their weight status is in a healthy range, even when provided their BMI scores (Truesdale & Stevens, 2008). Despite this, health-related triggers could create saliency in weight and its potential effect on health. Individuals would then pursue particular weight loss behaviors with hopes that the weight loss would aid in improving their health.

Physical Functioning

Excess weight has been shown to negatively affect physical functioning, disability and quality of life in obese individuals (Alley & Chang, 2007; Kolotkin et al., 2001; Ware & Sherbourne, 1992). Improving mobility has also been noted as a major reason for wanting to lose weight in obese individuals (Binks & Van Mierlo, 2010). Triggers creating discrepancy of how one's weight is affecting physical function and/or fitness level (e.g. trouble fitting into chairs, maneuvering through physical tasks, or activities of daily living) could reasonable motivate weight loss efforts. Of course, these behaviors may not be congruent with behaviors that one would pursue to reduce weight due to health-related meanings, and may be limited to those that have an actual limitation due to excess weight.

Attractiveness

Health is not considered to be directly observable. We must, instead, depend on observable cues that signal optimal levels of fitness or reproductive value (Buss & Schmitt, 1993; Perrilloux, Webster, & Gaulin, 2010; Symons, 1995). Of these physical cues, body size/dimensions and waist-to-hip ratio (WHR) are two of the major indicators impacted by excess weight (Singh & Young, 1995; Symons, 1995; Tovée, et al., 2002). Due to the tie to physical attractiveness, self-esteem and subsequent mate-value, these physical cues would be a significant area for female's to monitor and trigger weight loss behavior if needed (Brase & Guy, 2004).

High percentages (80%-92%) of those whom desire weight loss for body image reasons are actually in a normal healthy range of BMI (Davis & Cowles, 1991; Navia et al., 2003). There is suggestion that "looking healthy" holds more importance than being healthy, and that the attractive or beauty ideal is understood as the healthy ideal (Kwan, 2009; Ziebland et al.,

2001). There is reason to conclude that the environment can interact with, even exploit these innate psychological mechanisms (Symons, 1995). Overweight individuals are viewed as less attractive (Tiggeman & Rothblum, 1988), and a thin body is seen youthful (Tiggemann & Kenyon, 1998). Gangstead and Scheyd (2005) hypothesize that behaviors, such as dieting, exercise, liposuction and other forms of cosmetic surgery are an attempt to achieve such attractiveness. The appearance of health may involve efforts tied to both the increase in body size and alterations in body shape (Henss, 1995; Singh, 1993).

Body fat, as opposed to body weight, may also hold an independent tie to attractiveness and subsequent health. Body fat is viewed as both unhealthy and unattractive (Kwan, 2009). Body fat produces a great level of disgust, fear and bias in individuals. Schwartz and colleagues (2006) found staggering anti-fat attitudes with 46% of survey respondents reporting that they would be willing to give up 1 year of their life rather than to be obese, while 15% were willing to give up 10 years or more of their life. Those considered to be normal weight or underweight, reported even greater willingness to give up years of their life, with up to 22% willing to lose a limb rather than be obese. Endomorph body types (high fat, low muscle) have been labeled as much less attractive, more unhealthy (physically and psychologically), fatter, less athletic, less active, weaker, lazier, less popular, more sloppy, and less conscious of their appearance (Butler et al., 2001). Body fat has also been shown to be the key determinant of eating concerns, dieting efforts, dissatisfaction with weight, with an associated negative effect on the probability of dating (Halpern et al., 1999).

As such, appearance enhancement is a strong motivator (Buss & Shackelford, 1997), including weight loss efforts (Elfhag & Rossner, 2005), and physical activity (Davis & Cowles, 1991). This dissatisfaction in weight gain due to physical appearance has been shown to exist

into the older adult population (Clarke, 2002). Physical attractiveness and ties to self should not necessarily be evaluated in a negative light, as improvement in one's body image has been shown to be an important predictor of weight loss success (Annesi, 2006; Back-Sosnowska & Zahorska-Markiewicz, 2009; Teixeira et al., 2004, 2006) and associated with reason for exercise (Furnham, Badmin, & Sneade, 2002). Though not directly tested, there is also the possibility that attractiveness could be a motivator for weight maintenance, as well as other positive health-related behaviors that are tied to innate psychological mechanisms (Buss, Shackelford, Kirkpatrick, & Larsen, 1989; Thornhill & Gangestad, 1996).

WEIGHT-COPE GOAL HIERARCHY (AN EXAMPLE)

Such a hierarchy seems sensible with weight loss goal pursuits. For example, the hierarchical nature of weight loss may be simplified to a structure of gears (Figure 2.1). Each gear represents the complicated feedback loops that would persist during self-regulation of behavior. As shown in Figure 2.1, the largest gear is the Be Goal, which exists at the highest level of abstraction below one's ideal self. For this example, an individual may want to be more attractive, which she feels will be accomplished through a loss in weight. The next level of the hierarchy is represented by the Do Goal gear, which is a behavior that this individual feels will promote weight loss, her Be Goal. Choosing exercise as the behavior may then be chosen. However, exercise still remains a bit abstract, as there are many Action Goals that must be underway for one to doing exercise. In our simplified example, she may choose to go to the gym. Despite the Be Goal driving behavioral choice, the gear structure actually works in the reverse order. The Action Goal gear spins over time, and eventually causes the Do Goal gear to turn, which subsequently causes a turn of the largest Be Goal gear. She must go to the gym

enough over time to actually be doing exercising, and giving enough time there would be a decrease in weight.

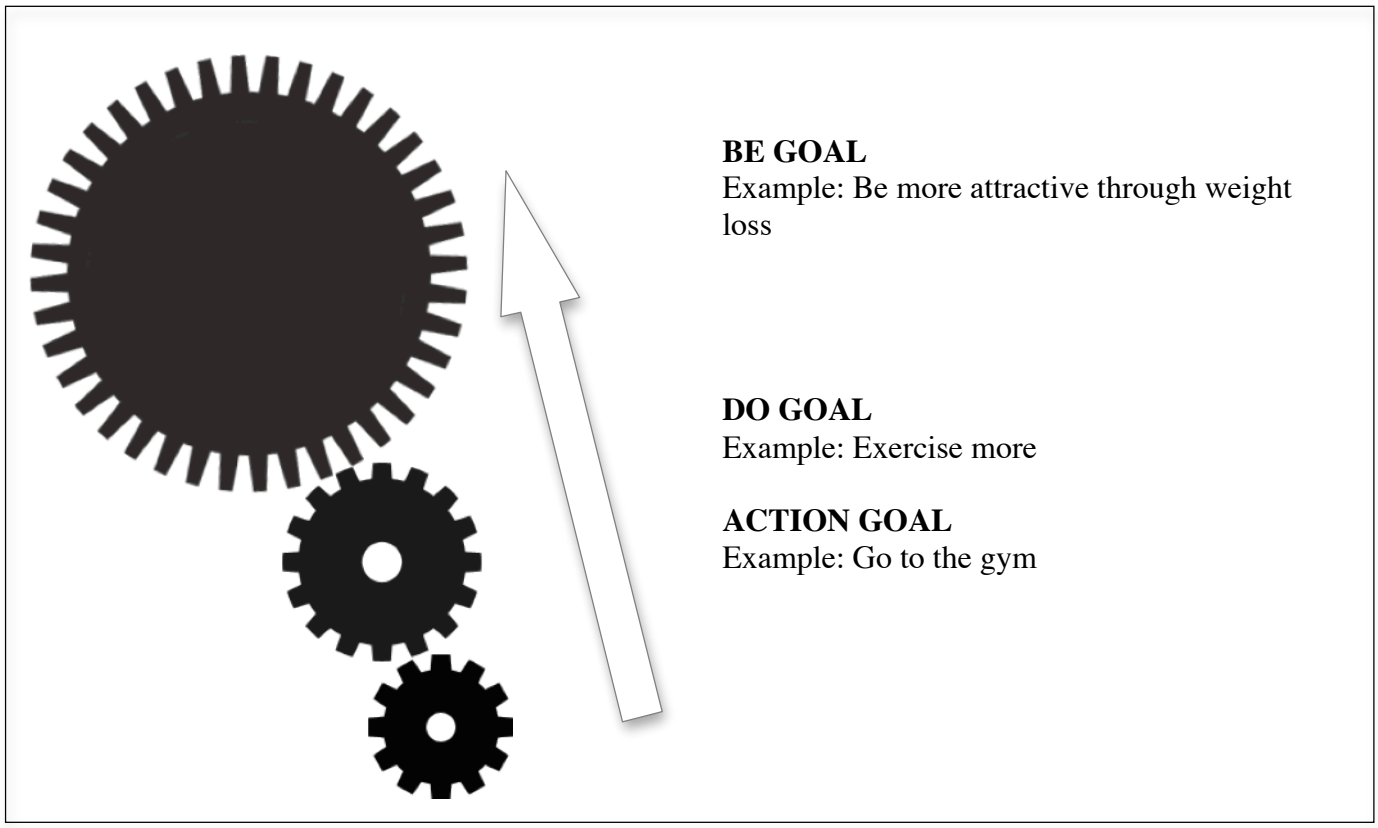

Figure 2.1: Hierarchical structure of goals (as gears): A weight loss example.

COPING

On one side, there is a common expectation that weight-related discrepancies should produce motivation towards healthy behaviors (e.g. exercise and healthy eating), and this is likely to be the case in particular individuals. However, unhealthy behaviors, decreased motivation, or psychological and behavioral avoidance appear to be more typical responses (Allaz et al., 1998; Heatherton & Baumeister, 1991; Neumark-Sztainer et al., 2006; Teixeira et

al., 2006). Due to the nature of discrepancy and associated dissatisfaction, subsequent behaviors (or lack there of) may be better conceptualized as coping responses.

In light of coping theory (Folkman et al., 1986; Lazarus, 1993; Lazarus & Folkman, 1987), primary appraisal of discrepancy can lead to two forms of coping behaviors. In general, coping has been categorized into problem-focused (PFC) and emotion-focused (EFC). Problem-focused coping refers to behaviors that are perceived to change the relationship between the person and the environment, such as dealing with the cause of the stressor or problem (e.g. weight loss). Emotion-focused coping refers to behaviors that are perceived to handle or regulate emotional distress, such as trying to forget about it, distraction, denial, blaming oneself, venting or wishful thinking. Specifically, disengaging coping strategies (e.g. wishful thinking, problem avoidance, withdrawal) have been linked to unsuccessful weight loss and weight regain in overweight individuals (Conradt et al., 2008; Kayman, Bruvold & Stern, 1990; Myers & Rosen, 1999), while more active engaging forms of coping have been shown to predict weight loss (Drapkin, Wing, & Shiffman, 1995). Interestingly, coping responses to body image related disturbances mediate the relationship between self-objectification in women and outcomes, such as depression, disordered eating, and well-being (Choma et al., 2009). Regardless, those individuals that can generate proper coping responses are more successful in weight loss (Drapkin, Wing & Shiffman, 1995; Elfhag & Rossner, 2005).

Emotion-Focused Coping

It is theorized that individuals can pursue EFC to regulate the emotional distress associated with the discrepancy that they face, and may promote inhibition (or enhancement) of weight loss regulation. Emotion-focused coping is generally considered maladaptive. It places the individual at risk for eating disturbance, is associated with more negative body image and

with increased distress, however weight loss has been shown to lessen the distress and the use of this form of coping (Koff & Sangani, 1998; Ryden et al., 2001; 2003).

In addition, EFC as maladaptive has been challenged – particularly when the source of the stress is perceived to be difficult to overcome or change (Austenfeld & Stanton, 2004; Lazarus, 1993). For example, lessening the distress may allow for future problem focused behaviors. Positive reappraisal, seeking social support for instrumental reasons, and venting of emotions have been proposed as possible emotion-focused coping responses that may enhance future problem-focused coping (Carver, Scheier, & Weintraub, 1989). The same coping responses could also be useful in women that are underweight or perhaps on-weight, while experiencing a perceived weight-related discrepancy.

Based on escape theory, such emotionally based coping may be utilized to completely avoid goal pursuits and limit chances of discrepancy (Heatherton & Baumeister, 1991). For example, a negative emotional experience with a body weight scale may drive one to indulge in short-term behaviors to enhance positive affect (e.g. eating ice cream), while also removing the chance of future discrepancy (e.g. not stepping on the scale again). This theory and associated emotion-focused coping may help provide support as to why 20% - 40% of obese women have no desire to lose weight (Kottke et al., 2002; Weiss, Galuska, Khan & Serdula, 2006).

It is common for overweight individuals to blame themselves for being overweight (Harris, Waschull, & Walters, 1990), and obese individuals may utilize emotional avoidance or denial about their weight (Elfhag, Rossner, & Carlsson, 2004). These examples are signs that individuals may utilize EFC brought on by weight saliency, inhibiting behavioral pursuits to lose weight. Responses to stressful life events in relapsers support this idea. Relpasers show greater

associations with avoidance forms of coping strategies to stressful life events, such as sleeping or passively wishing it away (Elfhag & Rossner, 2005; Kayman, Bruvold, & Stern, 1990).

Unfortunately, a common form of avoidance coping includes eating in response to stressful life events or to regulate mood (Arnow, Kenardy, & Agras, 1995; Elfhag & Rossner, 2005; Kayman, Bruvold, & Stern, 1990). Eating has been shown to be both a stressor and coping method in weight control (Solomon, 2002). The Emotional Eating Scale illustrate that binge eating commonly occur in response to feelings of anger/frustration, anxiety and depression (Arnow, Kenardy, & Agras, 1995). These momentary uses of food to enhance emotional state may supply aid to general life stressors, but subsequently impacts weight loss efforts and the distress from excess weight. Coping in this way may inhibit or produce relapse in those trying to lose weight. Type 2 diabetics on a balanced low calorie diet (i.e. not calorically deprived) were found to relapse most often in response to negative emotions and mood (Wing, Shiffman, Drapkin, Grilo, & McDermott, 1995).

Problem-Focused Coping

In the present study, PFC is synonymous to weight loss behavior. The perception of excess weight is operationalized to be at the root of the stress. As such, behaviors to reduce the perceived discrepancy, such as problem-focused outputs, are unique in weight-related discrepancies. Weight loss can be accomplished through a number of behaviors, but not all have the same association to health (i.e. positive vs. negative). The positive or negative associations to health, however, do not necessarily indicate that weight loss efforts are needed in every individual (e.g. underweight and on-weight). Rather, positive and negative was a way to classify the already reported responses found in the literature.

Problem-Focused Coping: Positive

Dietary modification and exercise behaviors are both recommended strategies for successful weight loss and maintenance (Blair, 1993; Donnelly et al., 2009). Accordingly, the majority of those successful with long-term weight loss and maintenance utilize both dietary intake modification and physical activity (Elfhag & Rossner, 2005; Kayman, Bruvold, & Stern, 1990; Klem et al., 1997). Specifically, overweight and obese individuals are recommended to reduce current energy intake by 500-1000 kcal, reduce dietary fat to <30% of total energy intake, increase moderate physical activity to150-300 minutes per week, while supplementing efforts with resistance exercise (Jakicic et al., 2001). There also appears to be a dose-response relationship with exercise and weight loss, with vigorous, high duration being the best (Jakicic et al., 2003). Increasing physical activity and exercise are reported as a method to lose weight (French et al., 1999; Kottke et al., 2002; Kruger et al., 2004; Millstein et al., 2008; Serdula et al., 1993; Tyler, Allan, & Alcozer, 1997), with walking being the most common modality choice (DiPietro et al., 1993; Kruger, Yore, & Kohl, 2007).

These recommendations, though physiologically advantageous, may be perceived as difficult to accommodate. Despite the clear importance of physical activity, the regularity and duration of such physical activity is typically poor (French et al., 1999; Kruger, Yore, & Kohl, 2007), and rarely meets weight loss recommendations (Kottke et al., 2002; Field, Aneja, & Rosner, 2007; Weiss et al., 2006). Kruger and colleagues (2004) found that 52.3% of women trying to lose weight claimed to exercise more in order to lose weight. It was unclear at what intensity, duration or frequency "more" meant. Field and colleagues (2007) found that only 33.7% of adolescent and young adult women exercise 1-4 days per week to control their weight. In addition, only 14% exercised ≥ 5 days per week. Weiss and colleagues (2006) found similar

results in U.S. adult women, with 31.4% choosing the combination of caloric restriction and ≥150 minutes per week of physical activity. Only 18.8% of women met ≥300 minutes per week of moderate to vigorous activity. These findings illustrate that exercise may be chosen as a common coping response to weight discrepancies, however suggested recommendations for weight loss may not be reached in those needing to lose weight.

The perception of exercise difficulty (Brock et al., 2010), body dissatisfaction (Millstein et al., 2008), and having excess weight or feeling fat, all serve as barriers to physical activity (Ball, Crawford, & Owen, 2000). One of the highest rated distressful coping situations for obese individuals is actually during exercise (Conradt et al., 2008). Interestingly, the more *satisfied* one is with body size, the greater use of physical activity or exercise to lose weight is found (Millstein et al., 2008). It may be that a minimal level of body satisfaction is required to exercise at any level.

Many individuals may be more prone to choose eating less rather than increasing physical activity to lose weight (Kottke et al., 2002). Although both exercise and dietary change should be pursued simultaneously, choosing both appears to be less common than a selection of only one (Weiss et al, 2006). Cutting calories and/or dieting have been reported as the most common forms of weight loss behaviors (Conradt et al., 2008; Kruger et al., 2004; Raynor et al., 2008; Weiss et al., 2006). Some individuals may also choose to eat healthier, such as eating less fat (Kottke et al., 2002; Kruger et al., 2004; Weis et al., 2006), or increase awareness to what they eat (Tyler, Allan, & Alcozer, 1997). These behaviors are most likely effective when pursued with a concurrent conscious decrease in caloric intake.

Problem-Focused Coping: Negative

Other weight loss behaviors may be pursued despite the actual cost on health (French & Jeffery, 1994; Lindeman, 1999), such as dangerous forms of cosmetic surgery, excessive dietary restraint, excessive exercise, supplement/diet pill use (Field et al., 2005; Kruger et al., 2004; Neumark-Sztainer et al., 1996; Pillitteri et al., 2008), skipping meals (Kruger et al., 2004; Tyler, Allan, & Alcozer, 1997), fasting (Serdula et al., 1994), laxatives and vomiting (Neumark-Sztainer et al., 1996), commercial diet products and fad diets (Tyler, Allan, & Alcozer, 1997), or initiation and continuation of smoking (Potter et al., 2004; White, McKee, & O'Malley, 2007). Many of these behaviors are being initiated as early as adolescence, which may increase the likelihood that they will engage in other health-compromising behaviors (Neumark-Sztainer et al., 1996; Paxton et al., 1990). Riddell and Inman (2007) reported that 20% of overweight and obese individuals did not believe that losing weight would improve their health. Body size and internalization of appearance standards have been shown to predict the extent to which one will actually put their health at risk to lose weight (Blow, Taylor, Cooper, & Redfearn, 2010). Chronic unhealthy dieting is associated with lower evaluation of one's own appearance, lower satisfaction with body, and the classification of one's weight higher than it actually is (Gingras, Fitzpatrick, & McCarger, 2004). In addition, being female is a significant predictor of unhealthy weight loss methods (Blow, Taylor, Cooper, & Redfearn, 2010).

How common are these behaviors? Field and colleagues (2007) found that 20% of adolescent and young adult women skipped meals to lose weight. This percentage was higher than those choosing to exercise ≥ 5 days per week (14%), weight-loss shakes (7.8%) and utilizing commercial programs (6.4%), and similar to limiting portion sizes (23%) or choosing a low calorie, low fat diet (~25%). Kruger and colleagues surveyed 6169 women trying to lose

weight, and 15% reported skipping meals, taking diet pills/laxatives/diuretics, fasting ≥24 hours or vomiting. Weight loss supplements use may range from 14% - 20% in women trying to lose weight (Burroughs et al., 2010; Weiss et al., 2006). Interestingly, 34% of women claimed they "drank a lot of water" as a weight control practice (Weiss et al., 2006). Caloric restriction is heavily used (63% - 75%; Kruger et al., 2004; Weiss et al., 2006), but is unclear in the literature the extent to which the calories are restricted and if it is at a healthy level. To lose weight quickly, women could enact extreme levels of caloric restriction beyond the suggested 500-1000 calorie deficit.

Camouflage

Other coping behaviors are common amongst weight- or fat-related discrepancy. One group of behaviors is defined here as camouflage (CAMO), which refers to those behaviors that are directed at covering up, hiding, or disguising the body, usually with clothing (see below). These tactics may give the illusion of decreased body size, body fat, and improved body shape. There are many undergarments available to women (e.g. corsets or "spanks") that help decrease the appearance of fat around the bodyline, enhance body shape, and decrease body size.

When individuals feel they are fat, have gained weight, or are dissatisfied with their bodies, they attempt to cover their bodies, while also avoiding bright colors, tight fitting or revealing clothes (Kwon & Parham, 1994; Tiggemann & Lacey, 2009; Trautmann, Worthy, & Lokken, 2007). These tactics have even been noted in middle-age and older adult populations (Clarke, Griffin, & Maliha, 2009; Tiggemann & Lacey, 2009). Clarke and colleagues (2009) found that clothing is often used to strategically to camouflage the signs of age in women, such as weight gain, altered body shapes, sagging and flabby arms.

Women may be turning to clothing as a form of EFC to enhance mood, or to lessen negative mood states and self-consciousness (Kwon, 1991; Kwon & Shim, 1999). Tactics such as these may be considered an act of avoidance coping. In light of self-regulation theory (Carver & Scheier, 2001), camouflage behaviors could allow for an individual to temporarily avoid discrepancy, thus potentially halting regulation of their weight loss behavior. If they are able to disguise to a perceived acceptable degree or regulate the negative feelings, these individuals may decide not to continue weight loss pursuits. However, if these tactics are able to lessen mood states and self-consciousness enough to maintain motivation toward PFC, then these tactics may be considered an act of approach coping. Viewed in this light, camouflaging behaviors are similar to the seeking of social support for either instrumental support for change or emotional support (Carver, Scheier, & Weintraub, 1989).

REGULATION OF WEIGHT LOSS BEHAVIOR

Despite dissatisfaction with weight and weight loss being a highly sought goal, regulation of weight loss behavior is difficult, and many are unsuccessful with their attempts (Ziebland et al., 2001). Those who do maintain weight loss share common qualities and behaviors, such as consuming a low fat diet, being able to reach an initial goal for weight, not overeating, frequent self-monitoring, and being physically active (Elfhag & Rossner, 2005; Wing & Hill, 2001). However, not all individuals pursuing weight loss behaviors utilize these successful strategies. Those who regain weight have been shown to exhibit a history of weight cycling, disinhibited eating, binge eating, eating in response to stress and negative emotions, and a decrease in self-monitoring (Elfhag & Rossner, 2005). "Dieting" has also been suggested as a short-term weight loss method, while exercise motivation appears to drive longer-term weight loss and maintenance (Teixeira et al., 2006). Elfhag and Rossner (2005) found similar

divergences between weight loss maintainers (i.e. maintained weight for at least 6 months) and relapsers (i.e. did not maintain weight 6 months or more). Maintainers exercised regularly, used social support, developed personal strategies, and appeared to confront problems directly. On the other hand, few relapsers exercised regularly, used social support or confronted problems directly, while a high percentage (70%) ate unconsciously in response to their emotions. In addition, as there is consensus that weight loss requires major effort and sacrifice (Ziebland et al., 2001), which may lead to quicker, less effortful weight loss methods (i.e. negative PFC methods) or no effort at all.

There are day-to-day events that direct women to think about their weight; from stepping onto the bathroom scale, to trying on a pair of old pants, to going to the gym to exercise, or being told to lose weight by the doctor. Saliency to weight, body fat and discrepancy produces negative affective responses (Faries et al., 2011; Faries & Bartholomew, unpublished data; Ogden & Evans, 1996; Ogden & Whyman, 1997). Such negative affectivity is largely related to drives for thinness, dissatisfaction with one's body, depression, and important health outcomes, such as eating disorders (Paa & Larson, 1998; Ricciardelli & McCabe, 2001; Sim & Zeman, 2005; Wiederman & Pryor, 2000). These common occurrences and associated distress are able to prime one's attention to their weight and body shape, which may drive even greater body dissatisfaction (Smith & Rieger, 2006). Although monitoring one's weight can cause distress, it is also related to successful weight loss and maintenance (O'Neil & Brown, 2005; Wing et al., 2007). These findings suggest that not all dissatisfaction is negative, per se, in that it may drive motivation in future weight loss behavior. Consistent self-regulation assumes the ability to face the day-to-day saliency to weight discrepancy with productive, healthy behavioral outputs.

However, as shown, individuals do not cope in the same way when discrepancy is present, and these coping responses may various impacts on future self-regulation of behavior.

Self-Regulation Theory

The theory of self-regulation (Carver & Scheier, 2001) provides a feedback loop model that illustrates how individuals monitor their behavioral efforts, and determine if they are successful in their goal pursuits (Figure 1.1). In short, a moment of saliency (e.g. stepping onto a weight scale or trying on a tight pair of pants) allows an individual to compare their current status to a perceived goal or standard that they are trying to either approach or avoid. For example, poorly fitting clothes, which is a common place for discrepancy, creates a situation where women tend to feel less than ideal, and blame or have negative feelings toward themselves rather than the clothes (Labat & DeLong, 1990). Feeling less than ideal is the perceived discrepancy from the standard, and the associated affective response lets the individual know how well she is doing in reducing that discrepancy. Behavioral efforts are then increased to reduce (or enlarge) the perceived discrepancy, with efforts are dependent on the magnitude and valence of the affective response (Carver & Scheier, 2001).

Feedback Processes

The view of feedback processes was visualized in Figure 1.1. The *goal/standard* is the reference value an individual uses to monitor as feedback on successful or unsuccessful regulation of behavior. The *input* is similar to one's own current perception, which has been supplied by something around them, such as a weight scale reading. The *comparator* represents the individual comparing their current perception (input) of themselves to the desired standard or goal, resulting in a perceived discrepancy. Once a discrepancy is perceived, an output behavior

is enacted, in response to the findings from the comparison. If there is no discrepancy, then the output function or behavior will remain as it was. In the presence of a discrepancy, then affect changes and behavior is ensued to either reduce or eliminate the discrepancy (discrepancy-reducing loop or negative feedback loop) or enlarge the discrepancy avoiding the reference value standard (discrepancy-enlarging loop or positive feedback loop). Regulating weight loss endeavors are mostly defined as discrepancy-reducing loops, as the person holds a standard of a lower weight than what they perceive themselves to be at. Thus, the individual will pursue behaviors that they think will reduce the now salient discrepancy. If the individual had a standard that they wanted to avoid, such as being fat or unfit, the lack or reduction of a salient discrepancy, the individual must then pursue behaviors to increase or enlarge the discrepancy. It should be noted here that Carver and Scheier (2001) express that the standard need not be static in nature. Rather, the standard could fluctuate and change with time, thus creating a monitoring system that must also adapt to be successful. For the purpose of this paper, the focus will be on discrepancy-reducing feedback loops.

Affect

Self-regulation includes a constant monitoring of where the individual perceives he or she is from the standard. Within this model, affect is theorized to provide feedback on the speed or rate of the discrepancy reduction, thus how well the individual is doing in reducing their perceived discrepancy. The affective response is a seemingly complicated (and not fully understood) play of positive affect (PA) and negative affect (NA). It is even theorized that affect performs more within its own separate self-regulatory loop (also called the meta-monitoring system, Table 2.1) to monitor the velocity of the action loop (Carver & Scheier, 2001). In other words, there is a perceived standard of how fast the action loop must be progressing. Any

alteration from this standard (good or bad) will create an affective response to guide further behavior.

Behavioral Situation	Situation at Action Loop	Construal at Meta-Loop	Affect
1. Progress toward goal, at a rate equal to the standard	Discrepancy Reduction	No Discrepancy	None
2. Progress toward goal, at a rate lower than the standard	Discrepancy Reduction	Neg. Discrepancy	Negative
3. Progress toward goal, at a rate higher than the standard	Discrepancy Reduction	Pos. Discrepancy	Positive
4. No progress toward goal	No Discrepancy Reduction	Neg. Discrepancy	Negative
5. Movement away from goal	Discrepancy Enlargement	Neg. Discrepancy	Negative

Table 2.1: Affect and the meta-monitoring system

Five examples of behavior over time, the situation that exists at the level of the action loop, how each situation would be construed at the meta loop, and the affect that theoretically would be experience. *Source*: Adapted from Carver & Scheier (2001).

In general, positive affect results when the behavior is moving in the direction and speed that is desired. If the behavior and outcomes differ from expectations, then negative affect should result. Negative affect is not necessarily 'bad', as previously illustrated, if it allows for continued approach toward the goal. An example model of approach-related affects compared to a criterion velocity was shown in Figure 1.2.

Thus, the affective responses to weight-related discrepancy motivate use of output behaviors, which appear to vary between individuals. In other words, not every individual chooses the same output behavior to reduce (or enlarge) the weight-related discrepancy. In

addition, due to the distress that these perceived discrepancy produce, this moment may be better seen as a stressor due to the potential threat to weight loss goal pursuits. "Stress occurs when goal-oriented efforts are interfered with or threatened. The more disruption (and the ore central is the threatened goal to the overall sense of self), the greater the distress," (Carver & Scheier, 2001, pg. 153). Weight is highly tied or meaningfully related to one's sense of self (Polivy & Herman, 2007) and internalization of thin-ideals is common in women (Thompson & Stice, 2001). When threatened, this should produce disruption and distress that must be addressed. Subsequently, output behaviors are better conceptualized as coping responses to the distress that weight-related discrepancies produce. This view has already been suggested in general body image disturbances (Cash, 2002; 2005).

Standards

The standard or goal that is used for comparison by the individual has particular qualities that aid in successful regulation of behavior. Standards must be clear and well defined, in that they are not ambiguous, uncertain, inconsistent or conflicting (Baumeister & Vohs, 2007). An improper standard may lead to disregulation of behavior, for instance if the standard is too high or too low. Lofty and difficult goals require more commitment, which is difficult to maintain especially if the loftiness of the goal might undermine the individual's self-efficacy (Locke & Latham, 2002).

SUMMARY

Perceived weight-related discrepancies and associated dissatisfaction is common among women. Body dissatisfaction and weight dissatisfaction are related, but different concepts. The literature supports a complex and concurrent relationship of innate, cultural and psychosocial

pressures to lose/maintain weight. These pressures, alongside the individual's goals or standards, influence the level of perceived discrepancy, affective response and future regulation of behavior. The output behaviors that follow are problem-focused coping behaviors (positive or negative) that result in weight loss, and/or emotion-focused coping that either enhance or diminish efforts in problem-focused behaviors (approach or avoidance, respectively). Due to the uniqueness of perceived weight-related discrepancy and self-regulatory responses, there is a clear need for a specified measure to capture resultant coping behaviors.

EXISTING MEASURES

There is a dearth of measures to capture even general body image coping responses, while none of these measures are able separate problem-focused behaviors into healthy or unhealthy means, or fully relate to future regulation of behavior. As mentioned, most studies that examine coping responses to weight loss maintainers and relapsers define stress as any demand that is taxing beyond perceived resources. These demands are focused on times where the individual has difficulty managing problem-focused weight loss/maintenance behavior, such as at social events, in the presence of food, at work or watching TV. Similarly, general coping measures are normally utilized to access how individuals cope with weight (e.g. Conradt et al., 2008). The present study is concerned with the distress that results from saliency to weight-related discrepancy. However, there are four measures that will need further attention. Two are commonly used to assess general coping responses to any stressor, the Ways of Coping (Folkman & Lazarus, 1985) and the Brief COPE (Carver, 1997). The final two measures, the Body Image Coping Strategy Inventory (BICSI, Cash et al., 2005) and the Body Change Inventory (BCI, Ricciardelli & McCabe, 2002), attempt to capture more general body image concerns and coping behaviors.

Body Image Coping Strategy Inventory (BICSI)

The BICSI (Cash et al., 2005) is designed to capture coping to general body image discrepancy. The instructions for completion of the BICSI provide description of body image threats or challenges, and ask participants to think about how much each of the coping strategies provided is characteristic of how they "usually cope or would probably cope with an event or situation that poses a threat or challenge to your body image feelings". Body image is defined as the thoughts and feelings associated with one's own physical appearance. The BICSI produces 3 factors: appearance fixing, positive rational acceptance, and avoidance. Appearance fixing describes coping behaviors that aid the perception of one's own appearance, such as "I try to do something to look more attractive" or "I think about what I should do to change my looks". The focus of these items is to direct attention to ways to become more attractive, thus improving body image. Weight loss efforts, utilizing physical activity, or eating healthier are not included. Positive rational acceptance describes the emotion-focused coping strategy to accept the disturbance, such as "I tell myself that I am probably just overreacting to the situation" or "I remind myself of my good qualities". The avoidance factor also describes emotion-focused coping strategies that allow for the avoidance of the disturbance, such as "I make no attempt to cope or deal with the situation" or "I try to ignore the situation and my feelings". These two factors are focused on abilities to deal with the emotional responses stemming from general body image discrepancy.

The avoidance factor has been shown to positively correlated to the appearance fixing factor (0.37 to 0.53), and holds either no correlation or slightly negative relationship to positive rational acceptance (0.08 to -0.24; Cash, Santos, & Williams, 2005; Choma et al., 2009). Positive rational acceptance appears to not correlate to appearance fixing (0.00 to 0.11). The

factors of the BICSI have been examined in relationship to other psychological well-being constructs, such as trait self-objectification, body shame, depression, well-being, body image states, body dissatisfaction, self-esteem, appearance motivation and body image quality of life (Cash, Santos, & Williams, 2005; Choma et al., 2009; Melnyk, Cash, & Janda, 2004). In general, avoidance and appearance fixing tend to relate to these constructs in a similar adverse fashion, while positive rational acceptance relates to such variables in a beneficial manner. Appearance fixing and avoidance have also been shown to partially mediate associations between body shame (and self-objectification) and depression, disordered eating attitudes or subjective well-being in an adverse fashion (Choma et al., 2009).

Body Change Inventory (BCI)

Ricciardelli and McCabe (2002) created the Body Change Inventory (BCI) specifically to factor analyze common strategies utilized by adolescents. The initial items were grouped into six body change categories, and were rated on a 5-point Likert scale ("never" to "always"). Instructions ask participants how often they thought about, felt like or actually engaged in the particular behaviors. The analysis revealed an internally consistent ($\alpha = 0.95$) three-factor structure for strategies: to decrease body size, increase body size and to increase muscle size. Factor 1, strategies to decrease body size, influenced all restrictive food practices (e.g. skip meals, refusing to eat, or dieting), and was positively associated with drive for thinness and the dieting factor from the Bulimia Test-Revised. This measure is novel, as it approaches strategies utilized by both girls and boys, while adding the third factor of increasing muscle size. However, the final measure is general in its strategies (e.g. "feel like changing foods you eat", "change levels of exercise", "think about exercise"), and do not separate into emotion or

problem-focused domains. Also, this measure does not separate the healthy from unhealthy strategies to alter body size and/or decrease weight.

Obesity-Related Coping Inventories

Obesity-related coping inventories have previously been developed (Conradt et al., 2008; Ryden et al., 2001). Conradt and colleagues (2008) utilized the short form of the Coping Strategies Inventory (Tobin, Holroyd, Reynolds, & Wigal, 1989) to express how obese individuals coped in distressing situations (e.g. negative evaluations from others or self, when shopping for clothes, or during exercise). Specifically, participants were asked to describe a particular event then answer the coping measure. Disengaging and engaging coping strategies were positively and negatively associated with weight-related shame, respectively.

Ryden and colleagues (2001) developed a specific measure to capture how individuals cope with the psychological problems stemming from obesity ($\alpha = 0.71$-0.77). Three factors were found: social trust (turning to others for help and support), fighting spirit (seeing problems as challenges and not allowed to influence mental well-being), and wishful thinking (dreams of hope and change, with refusal to accept their weight situation). Those eligible as surgical candidates for their obesity showed less problem-focused and greater use of emotion-focused coping. Though novel, this measure focuses attention obese individuals, and coping specifically with the psychological aspects of obesity.

NEED FOR A NEW COPING MEASURE

It was clear that a novel coping measure was required to address the theoretical confluence between the Transactional Model of Stress and the Model of Self-Regulation. Specifically, there was a need for a measure that can better elucidate how individuals cope with

common, perceived weight-related discrepancies, while considering how coping responses impact subsequent motivation in weight loss efforts and behaviors. This dissertation was designed to achieve this aim. The present investigation sought to generate items, and develop a reliable and valid measure for coping responses to perceived weight-related discrepancy. In addition, relationships among factors, with other related constructs, and potential moderating variables were examined.

Chapter III: Methods

General Introduction

An online self-report tool was used for data collection of a measure to capture general coping behaviors to weight-related body dissatisfaction and distress. The measure, referred to here as the WEIGHT-COPE, was hypothesized to contain 4 factors. These 4 factors represented the major areas of coping thought to be utilized, (1) *Positive problem-focused coping* (PFC+), which described behaviors that may reduce weight with a concurrent positive relationship with health (e.g. exercise and healthy eating); (2) *Negative problem-focused coping* (PFC–), which described behaviors that may reduce weight while also being considered negative health behaviors (e.g. cutting calories, supplement use, and suppressing appetite); (3) *Approach coping* which described mainly emotion-focused, reappraisal and active responses that were theorized to enhance future engagement problem-focused/weight loss efforts (e.g. positive reframing, planning); (4) *Avoidance* coping, which described mainly emotion-focused, reappraisal and active responses that were theorized to diminish future engagement in problem-focused/weight loss efforts (e.g. self-distraction, avoidance, disengagement). To accomplish this end, a sample (n=470) of 18-35 year old women were recruited for initial development and validation of the WEIGHT-COPE.

Design

Step one was item generation. A large number of developed items were systematically reduced to a set of final items for analysis. These items (≥10 items per factor) were then administered in an online survey format to participants. Step two was to use a confirmatory factor analysis (CFA) with maximum likelihood (ML) estimation to test the hypothesized factor

structure of the WEIGHT-COPE, and to establish the best measurement model to fit the data. Step 3, due to poor fit from the initial CFA, was to run an exploratory factor analysis (EFA) to establish the best fitting factor structure to the data. Step 4 was to develop a more parsimonious short-from for a final WEIGHT-COPE measure. Finally, Step 5 utilized a structural regression model to analyze the theoretical relationships amongst the factors. These methods, from item development to establishing the final measurement model followed the steps proposed by DeVellis (2003) and Kline (2005). The final goal of determining the length of the scale (i.e. dropping items or not) is to maximize model fit, while also creating the shortest scale possible for ease of administration (i.e. most parsimonious model). A visual representation of the decision tree utilized is shown in flow chart format (Figure 3.1). Details of these decisions are provided in the following sections.

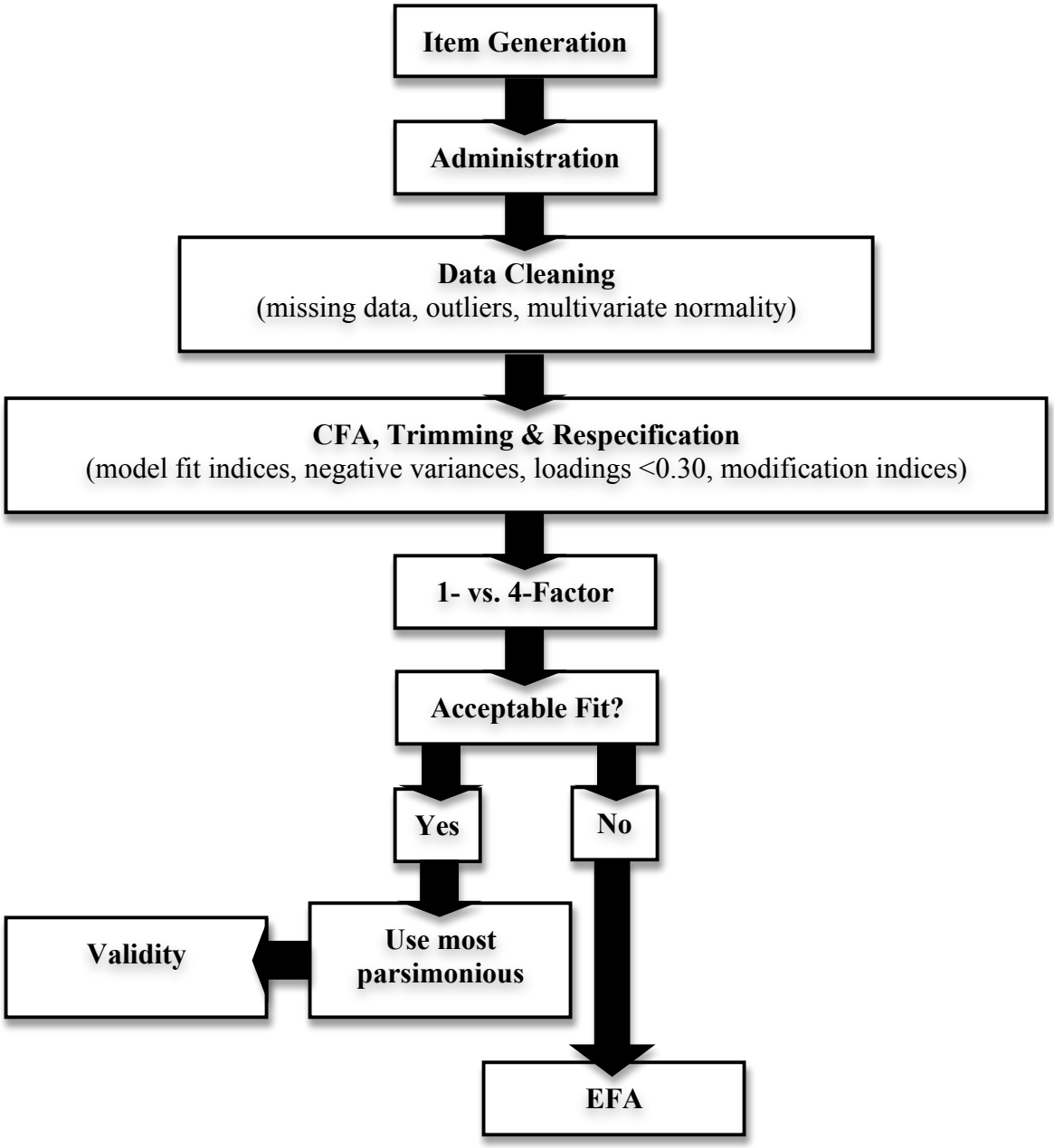

Figure 3.1: WEIGHT-COPE development & decision flow chart.

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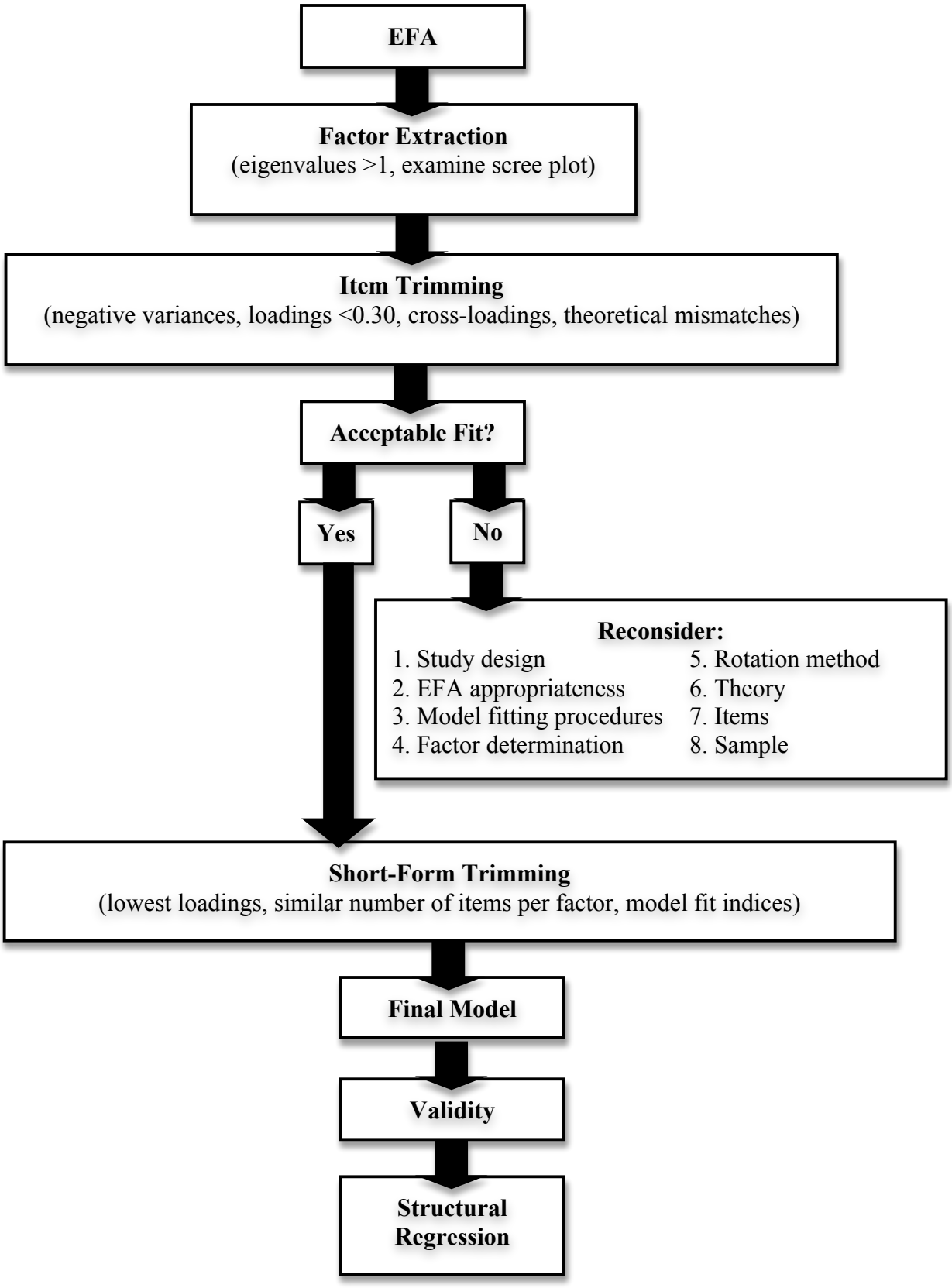

Figure 3.1 (cont): WEIGHT-COPE development & decision flow chart.

PARTICIPANTS & ADMINISTRATION

Women were recruited mainly through an online, university-wide message board (i.e. KNOW events). A brief announcement was created for the message board, which was accessible online, and emailed to university students, faculty and staff daily. Participants were also recruited through word of mouth and classroom visits within the university. Recruitment involved relaying a description of the study, the time it would take to complete they survey, an online link to access the survey at a time and location of their choice, and the focused inclusion criteria of 18-35 year old females. No attempt was made to exclude any ethnicity or weight status during recruitment. Weight classifications were determined by BMI from self-reported height and weight [weight (lb) / [height (in)]^2 x 703]. Specifically, <18.5 designated underweight, 18.50 – 24.9 were normal weight, 25.0 – 29.9 were overweight, and ≥30 were classified as obese.

All participants were informed in the consent that the completion of the survey was completely voluntary with no repercussions for ending participation at any time. The online link for the survey was available for access approximately 3 months, at which time the present sample size (n=470) had completed the survey. The entire measure was self-reported online through Qualtrix data collection software. All measures included within the complete survey are provided below.

ITEM DEVELOPMENT

Initially, numerous discussions and consultations with weight loss program participants and public or student body composition testing clients revealed strategies that individuals utilize to cope with distress stemming from weight–related discrepancies. The individuals from the weight loss program were either on-weight, overweight or obese faculty or staff at the university,

ranging from approximately 25-65 years of age. As a part of weight loss program with The Fitness Institute of Texas (FIT), participants were provided prescriptions for weight change. To introduce this topic, we began with a discussion of weight-related dissatisfaction and common coping mechanisms. In addition, FIT provides testing for large numbers of undergraduate students and women from the community, who range in approximate age of 18 to 65 years and represent all body sizes. They were typically paying clients, coming in for guidance on how to lose weight and improve fitness. Again, as way to broach the topic and provide individualized counseling, these women were encouraged to share their history of dissatisfaction and coping mechanisms. Notes were taken during and following these interactions. A list of potential coping strategies were developed from these notes. In addition, specific wording used by these women was noted and served as initial items.

Secondly, an extensive literature review was conducted to develop the use of the hypothesized clumping into a 4-factor structure. The literature review cast a broad net across all studies that measured weight loss strategies, coping, camouflage techniques, and self-regulation. From this review, a pool of items for each factor was developed. The third step allowed the items to be reviewed by experts in the fields of behavioral health, weight loss, emotion-regulation, and coping. These reviews yielded approximately 10-15 items per factor to guide the development of the measurement model. These were formatted into a 7-point Likert-scale from *not at all, somewhat likely, likely,* to *definitely*.

The problem-focused items (positive [PFC+] and negative [PFC–]) were developed using the above steps, focusing each item on weight-loss behavior literature (Table 3.1). Problem-focused (positive) consisted of items related to increasing behaviors such as: exercise, physical activity, healthy eating behaviors, and decreasing or limiting behaviors such as: sedentary time,

eating less fat, and sweet/high-fat foods. Problem-focused (negative) consisted of items that tap into increasing common, unhealthy behaviors that may promote weight loss, such as skipping meals, smoking, quick weight loss, supplements and appetite suppression.

The Approach and Avoidance items were mainly developed from the coping, self-regulation, and appearance-modifying literature. Interviews conducted during the item development process revealed responses shown in all previously mentioned coping scales, however no one scale was sufficient to support the present research questions. Existing scales provided insight on wording of the items. Organization of items into either Approach or Avoidance was determined by the theorized effect on subsequent engagement in problem-focused behavior. Specifically, Approach items included items for self-distraction (via physical activity/exercise), seeking instrumental social support, positive reframing, planning, instrumental camouflaging, and increased monitoring efforts (i.e. approach monitoring). Avoidance items included items for self-distraction (via other non-active activities), denial, seeking emotional social support, emotional camouflaging, decreased monitoring efforts (i.e. avoidance monitoring), disengagement, emotional eating, and acceptance. All the items are shown in Table 3.1.

Problem-Focused Coping (Positive)	Problem-Focused Coping (Negative)
1. Increase exercise efforts.	1. Find ways to suppress your appetite.
2. Reduce your intake of sugary foods and drinks.	2. Skip meals.
3. Make an effort to avoid environments where you would overeat	3. Try a liquid-based diet.
4. Find ways to become more physically active.	4. Eat less than you probably should.
5. Become more careful about what you eat.	5. Utilize cosmetic surgery.
6. Make healthier food choices.	6. Use techniques to help lose water weight.
7. Try to eat less fat in your diet.	7. Use supplements to help you control food cravings.
8. Try to lessen portion sizes.	8. Try to ignore your hunger.
9. Avoid sitting too much.	9. Use weight loss supplements.
10. Limit eating sweet, high-fat foods.	10. Use a “go to” diet.
11. Eat less junk food.	11. Seek quicker weight loss methods.
12. Try to do more weight training.	12. Exercise excessively.
13. Make sure not to over consume food.	13. Smoke to help control your appetite.
14. Limit how much fast food you eat.	14. Take laxatives to help you lose weight.
15. Eat more fruit & vegetables.	15. Take medication to help you lose weight.
16. Go to the gym.	16. Drink a lot of water.
17. Drink fewer alcoholic beverages.	17. Fast or go without food entirely.
18. Use home exercise equipment.	

Table 3.1: WEIGHT-COPE Factors and items.

Continued…

Approach Coping	**Avoidance Coping**
1. Turn to exercise or physical activity to take your mind off of things. (*self-distraction)* 2. Try to do something to think about it less, such as exercising, walking, running, playing a sport, or going to the gym. (*self-distraction)* 3. Seek help on how to lose weight. (*instrumental social support)* 4. Seek professional assistance for weight loss (*instrumental social support*) 5. Seek a formal program (e.g. Weight Watchers, Nutrisystem) to help you lose the weight (*instrumental social support*) 6. Try to see it in a different light, to make it seem more positive. (*positive reframing)* 7. Look for something good in what is happening. (*positive reframing)* 8. Try to come up with a strategy about what to do about your weight. (*planning)* 9. Make a plan of action to lose weight. (*planning)* 10. Set realistic weight loss goals for yourself. (*planning)* 11. Try to disguise or "cover up" your weight, until you can do something about it. (*instrumental camo)* 12. Make a special effort to appear thinner, so you can stay motivated. (*instrumental camo)* 13. Start tracking and monitoring your calories. (*approach monitoring)* 14. Increase attempts to monitor your weight. (*approach monitoring)* 15. Try to monitor the behaviors that you think will help you lose weight. (*approach monitoring)* 16. Realize you brought the problem on yourself (*accepting responsibility)* 17. Make a promise to yourself that things will be different next time (*accepting responsibility)*	1. Turn to work or activities, <u>other than</u> exercise & physical activity, to take your mind off of things. (*self-distraction*) 2. Do something to think about your weight less, such as going to the movies, watching TV, getting on the computer, reading, daydreaming, sleeping or shopping. (*self-distraction*) 3. Tell yourself "this isn't real". (*denial*) 4. Pretend that it is not really happening. (*denial)* 5. Seek emotional support from others. *(emotional social support)* 6. Seek comfort and understanding from someone. *(emotional social support)* 7. Avoid whatever is making you feel overweight or fat. (*avoidance monitoring)* 8. Try to ignore the situation and your feelings. (*avoidance monitoring*) 9. Try not to think about it. (avoidance monitoring) 10. Give up on trying to deal with your weight. (*disengagement)* 11. Avoid attempts to lose weight. (disengagement) 12. Do nothing. (*disengagement*) 13. Try to accept yourself as you are (*acceptance)* 14. Learn to live with your weight (*acceptance*) 15. Make efforts to hide or disguise your weight, so you do not have to think about it (*emotional camo)* 16. Use techniques that help you improve the shape of your body. (*emotional camo)* 17. Wear loose clothing, so you do not have to think about your weight. (*emotional camo)* 18. Eat comfort foods. (emotional eating) 19. Eat to help yourself feel better again (emotional eating)

Table 3.1: WEIGHT-COPE Factors and items.

Instructions for the WEIGHT-COPE sought to prepare the participants for the proposed WEIGHT-COPE coping responses. The instructions were as follows, and the full WEIGHT-COPE measure is in Appendix A.

"Day to day we all have moments that make us think about our weight, body size or body fat levels. We may see our weight on a scale, try on a pair of old pants that are now too tight, hang out with a thinner crowd, or even have difficulty going up the stairs. Everyone deals with these moments differently.

In general, when you feel overweight or fat how likely would you be to...

Not at All		*Somewhat Likely*		*Likely*		*Definitely*
1	**2**	**3**	**4**	**5**	**6**	**7**

CONFIRMATORY FACTOR ANALYSIS & TRIMMING

After item development and scale administration, Step 2 utilized a confirmatory factor analysis (CFA) to model the raw data in MPLUS. Confirmatory Factor Analysis technique "analyzes a priori measurement models in which both the number of factors and their correspondence to the indicators are explicitly specified," (Kline, 2005; pg. 71). As stated, the present study first hypothesized a four-factor structure and an initial correspondence of ≥10 indicators per factor.

Model fit indices are utilized to determine how well the model fits the data found in the sample. As such, model fit was established by analyzing the following indices: (a) model chi-square ($p \geq 0.05$), (b) root mean square error of approximation (RMSEA) with 90% confidence interval (value ≤ 0.05), (c) comparative fit index (CFI; value ≥ 0.90), and (d) standardized root mean square residual (SRMR; value ≤ 0.10). Factor correlations were further examined to help

confirm all factors are discriminant and distinct. A correlation of ≤ 0.85 between factors distinguished discriminant factors (Kenny, 1998). Fit indexes and subsequent measurement model fit were interpreted according to Kline (2005). For reliability, Cronbach's alpha was computed for each factor and the overall scale. An alpha of 0.70 was considered the lower acceptable bound (DeVellis, 2003).

Estimation Procedure

Kline (2005) suggests that a CFA should first be run to rule out the possibility of a 1-factor model structure. To test this possibility, all 72 items were directed in MPLUS syntax to load on a single factor. Next, the proposed 4-factor model was tested within a CFA, utilizing Maximum-Likelihood (ML) parameter estimation procedures. ML estimation procedure is similar in theory to utilizing least-squares to estimate the best fitting regression model, providing estimates for the model's paramaters (Kline, 2005). The 4-factor model was hypothesized to contain one positive PFC factor (PFC+), one negative PFC factor (PFC–), one Approach factor and one Avoidance factor. Factor variances were set at 1, to establish a scale for the latent factors, as well as allow each factor loading to be freely estimated.

Trimming for Parsimony

Item Normality

Multivariate normality was established though analysis of univariate normality of the items. A skewness index >3 indicates a positive skew, whereas an index <3 indicates negative skew (Kline, 2005). A kurtosis index of >8-20 may indicate extreme kurtosis (Kline, 2005). Non-normal distributions are common (Barnes et al., 2001; Gao, Mokhtarian, & Johnston, 2002), and arguments have been made for how to handle these non-normal distributions; including

score transformation, deleting of cases, or leaving the items alone. Based on suggestions made by Barnes and colleagues (2001) and Vieira (2011), any slightly non-normal distributed items (near 3 or 20 for skew and kurtosis, respectively) were left alone.

Negative Variances

Next, residual (error) variances, which is all other variance of each item not explained by its factor, were examined to detect negative variances (i.e. Heywood Cases), thus trimmed. Negative variances typically occur alongside a standardized factor loading with an absolute value greater than one, and commonly results when a factor only has two indicators (Kline, 2005). At times, ML estimation will do whatever it can to force specification of the model, at the expense of creating implausible correlations greater than 1 and negative error variances.

Factor Loadings and Modification Indices

Next, standardized factor loadings on the indicators were examined. These are the estimated correlations between the factor and its indicators. A minimum acceptable factor loading was 0.30 (Tinsley & Tinsley, 1987), with <0.40 considered low. Any loading below 0.30 was considered eligible for trimming. As stated, theoretical confluence will help guide all trimming processes.

Lastly, modification indices were requested from the MPLUS syntax. These indices provide suggestions for adding paths and error covariances within the model to improve the fit. Specifically, each modification indices estimate (M.I.) indicates how much the model chi-square would drop if the suggested path were added to or deleted from the model. These paths include factor loadings, as well as the correlation of error variances. Model fit indices determined significance of the enhancement or decrement in overall model fit after trimming occurred.

EXPLORATORY FACTOR ANALYSIS & TRIMMING

Due to inability to confirm a factor structure within the CFA, Step 3 analyzed the raw data in an EFA. An EFA attempts to find the least number of factors that underlie the items, specifically to "arrive at a more parsimonious conceptual understanding of a set of measured variables by determining the number and nature of common factors needed to account for the pattern of correlations among the measured variables," (Fabrigar, Wegener, MacCallum, & Strahan, 1999, p. 274). Arguments have been made to support the use of an EFA over trying to respecify a CFA model to an extended degree (e.g. Hurley et al., 1997). Such respecification in CFA, especially through modification indices, can be argued as actually exploratory in nature. Thus, an EFA was considered a better option than extreme respecification attempts of the CFA. Model fit of the EFA were determined by model fit indices. Missing data were handled with Full Information Maximum Likelihood (FIML), which enables MPLUS to use all data points, even for cases with a few randomly missing responses. "Rather than filling in the missing values, [FIML] uses all of the available data – complete and incomplete – to identify the parameter values that have the highest probability of producing the sample data," (Baraldi & Enders, 2010, pg. 18).

Factor Extraction & Rotation

The present EFA utilized ML estimation and Geomin (Oblique) rotation method. Maximum Likelihood estimation in EFA utilizes mathematical iterations to extract the number of factors and associated factor loadings (i.e. simple structure). The rotation of factors then attempts to maximize high loadings and minimize low loadings. Geomin oblique rotation is the default rotation method in MPLUS. Oblique rotations assume there is some amount of

correlation amongst the factors, and has been widely suggested as most appropriate (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

To establish the number of factors derived from the data, EFA uses eigenvalues and a scree plot. Eigenvalues represent the amount of variance captured by a factor, and eigenvalues below 1 are not typically retained. The eigenvalues may also be expressed in a scree plot, which suggests retaining factors above the elbow. Eigenvalues and the scree plot may not be clear-cut, thus retaining factors should be ultimately interpreted by what makes theoretical and logical sense (Fabrigar, Wegener, MacCallum & Strahan, 1999).

Trimming for Parsimony

As in the CFA, loadings <0.30 and negative error variances were utilized for item trimming. In addition, high cross-loadings were examined. Unlike the CFA that fixed one loading per item, all items in the EFA were allowed to load on each factor. Item loadings greater than 0.30 on two or more items were deleted for high cross-loadings. There was also a possibility that an indicator would not theoretically match the other items under the respective factor. In these cases, theoretical management of items was chosen over empirical decisions. All trimming occurred in a step-wise fashion, with consideration of theory, to establish the most parsimonious model. The final model was considered the *long-form* of the WEIGHT-COPE.

In the instance of failure to produce an interpretable or plausible model, Fabrigar and colleagues (1999) detail five major areas to investigate, including study design, appropriateness of the EFA, chosen model-fitting procedures, factor determination methods, and rotation methods. In addition to these five suggestions, original theoretical constructs, item development and further issues with the current sample (e.g. characteristics, selection) were to be considered.

WEIGHT-COPE SHORT-FORM

Step 4 was to continue in the determination of the most parsimonious model for the data by creating a *short-form* of the WEIGHT-COPE, while creating an equal number of items per factor. The short-form further trimmed the long-form, despite the long-form exhibiting acceptable model fit. The short-form was determined by trimming the items with the lowest factor loadings, until a similar number of items per factor were reached.

HIGHER ORDER FACTORS & STRUCTURAL REGRESSION

Finally, Step 5 further tested the theoretical nature of the WEIGHT-COPE factors, utilizing structural regression (SR) model. A SR model allows the simultaneous testing of hypotheses about patterns of relationships among latent variables (Kline, 2005). Structural Regression is a path analysis, but with latent factors instead of observed variables. This simple non-recursive SR analysis was for exploratory reasons only, testing theorized relationships among the factors. Although a CFA is the ideal method to conduct an SR analysis (Kline, 2005), there is no current statistical method to conduct an EFA and SR model. The newly developed exploratory structural equation modeling (ESEM) may be a promising tool in MPLUS for the future (Asparouhov & Muthén, 2009). However, an EFA was considered useful here even if it did not allow for a true test of model fit. Thus, model fit indices were not examined. Instead, the focus was placed on the ability of a SR to provide insight on how the factors may be related within a framework of self-regulation and stress/coping theories. All indicators/items were directed to load on the specific factor found in the EFA. Factors were ordered in a theoretical fashion, stemming from a perceived discrepancy to more tangible coping behaviors. The descriptive ordering of the factors took place upon findings of the EFA, thus presented within the Results section. All relationships are labeled with standardized regression coefficients (β).

Standardized regression coefficients represent the slope of the regression line, and were interpreted as follows: with every 1 unit increase in the independent variable, the dependent variable increased by the β units (or decreased, if β is negative). To help present the most simplified model possible, similar factors resulting from the EFA were allowed to be grouped as higher order factors where appropriate.

VALIDITY

To aid in validity, Spearman correlations were calculated among the WEIGHT-COPE factors and other theoretically related constructs, due to the ranked order of the items. Correlations vary in magnitude based on the sample size of that variable. Specifically the magnitude of the correlation will decrease as the sample size increases. Thus, in large sample sizes, the magnitude may appear small, but still be a significant and impactful correlation between two variables. Based on a power estimate of 0.80 at an alpha level of 0.05, a significant correlation with present sample size (n=470), a correlation value of approximately equal to or grater than 0.11 was considered significant.

The following inventories were utilized for validity purposes: Objectified body consciousness scale (body shame, control beliefs, surveillance), social physique anxiety, global self-esteem, recent physical activity & dietary behavior, exercise & healthy eating efficacy, affect, and body dissatisfaction. Descriptions of these measures follow.

Other Measures

Demographics

The demographics questions included a basic self-report of current age, ethnicity, height, weight, and goal weight. To focus on those participants trying to lose or maintain weight (versus

gain weight), a single item measure determined if each participant is currently trying to gain weight, lose weight or maintain weight. These categories may moderate the relationship between current weight and dissatisfaction (Schwartz & Brownell, 2004). The participants were asked to rate how likely they would be to feel fat, feel heavy, feel overweight, or dismiss as just feeling bloated during salient-weight-related experiences. These items shed light on possible self-perceptions of how participants' generally see themselves in these moments.

Weight Loss History & Desired Weight Loss

Weight loss history was concerned with amount of weight cycling (Friedman, Schwartz, & Brownell, 1998). Cycling referred to the number of times weight has been lost and regained over a lifetime. Weight cycling was measured by the number of times participant has lost and regained 5-9lbs, 10-19lbs, 20-49lbs, 50-99lbs and 100lbs or more. The total number of times weight was lost and regained was calculated by summing across all weight cycling categories. The total amount of weight (pounds) lost and regained was calculated by multiplying the number of times reported by the mean weight of that category, then summing across all five categories. Finally, desired weight loss was calculated from self-reported goal weight minus actual weight. In calculating in this manner, the more negative the difference becomes, the more weight that the participant wanted to lose.

Physical Activity Levels

To measure physical activity, version 2 of the World Health Organization Global Physical Activity Questionnaire (GPAQ) (Armstrong & Bull, 2006; Appendix B) was used. The GPAQ was developed to assess physical activity in a self-report format for surveillance purposes, especially in developing countries. With this goal in mind, the GPAQ captures

physical activity data in key domains or setting in daily life, despite diverse lifestyles. Specifically, the GPAQ captures three major domains with 15 items, including physical activity levels at work, during travel (walk, bike), and during leisure time activities (exercise, sport). Participants were asked how many days and how much time they spend doing moderate intensity and vigorous intensity levels of each these activities. Moderate intensity was defined in the instructions as activities that "require moderate physical effort and cause small increases in breathing or heart rate," while vigorous intensity was defined as activities that "require hard physical effort and case large increases in breathing or heart rate." Moderate intensity was analyzed as equivalent to 4 metabolic equivalents (METs), and vigorous intensity was analyzed as 8 METs. A single, final item captured sedentary time (sitting or reclining) in a typical day.

The GPAQ has been found to be a suitable and reliable measure for physical activity measurement (Bull, Maslin & Armstrong, 2009). The World Health Organization provides a detailed analysis guide for the GPAQ (http://www.who.int/chp/steps/GPAQ/en/index.html). Data were analyzed as total average minutes per week of moderate and vigorous travel and leisure time physical activity. Moderate intensity and vigorous intensity physical activity were treated as a single combined variable.

Dietary Intake

Dietary intake in the present study was concerned with both healthy and unhealthy food choices. Fruit/vegetable, high fat and high sugar intake were chosen to represent healthy and unhealthy food choices, respectively. Intake was assessed through a modified food frequency questionnaire developed from the self-administered multifactor screener from the U.S. National Cancer Society, division of cancer control and population sciences (*http://appliedresearch.cancer.gov/surveys/nhis/multifactor/scoring.html*). The questionnaire

(Appendix C) contained 15 total items. Fruit and vegetable intake were measured through 3 items (fruit, lettuce or green leafy salad, other vegetables). High fat and high sugar foods were measured through 12 items (fruit juices, regular potato/corn/tortilla chips, french fries/hash browns, bacon/sausage/beef, fast food or restaurant hamburgers/cheeseburgers, other fast food, while milk, sweet foods, cheese, sodas, and pizza). Participants were asked to report how many times they ate or drank the foods listed in the questionnaire over the past week. Totals in each category (i.e. fruit/vegetable vs. high-fat/high/sugar) were calculated by summing the number of times each respective item was consumed.

Objectified Body Consciousness Scale

The OBCS (McKinley & Hyde, 1996; Appendix D) assumes that women are responsible for their appearance and can control how their body looks. A three-factor structure was found, surveillance (8 items), body shame (8 items), and appearance control beliefs (8 items). *Surveillance* suggests individuals are trying to ensure they match up to perceived body related standards, with higher scores for those that watch their body frequently, more worried about how they look than how they feel. *Control Beliefs* suggests a level of control on how their body looks, with a higher score representing the perceptions one can control weight and appearance if she works hard enough. Lower scores not only represent lower perceived control over body, but also suggest the writing off of the control to outside forces, such as heredity. *Body Shame* is felt when one does not match up to her internalized standards, with a higher score suggesting more shame or feeling like a "bad person" for not matching up to such standards. Surveillance and Body Shame were shown to be negatively correlated with body esteem, and significant predictors of distorted eating. Control Beliefs positively correlated with body esteem and utilizing exercise to control weight. Reliability for each factor was moderate to high in both

undergraduate and middle-aged women, respectively (Surveillance [$\alpha = 0.79, 0.76$]; Body Shame [$\alpha = 0.84, 0.70$]; Control Beliefs [$\alpha = 0.68, 0.76$]). Alphas were consistent in the present study; Surveillance ($\alpha = 0.82$), Body Shame ($\alpha = 0.85$), and Control Beliefs ($\alpha = 0.80$).

Social Physique Anxiety

The social physique anxiety (SPA) measure was developed to measure the anxiety that individual's experience when they perceive others are evaluating their physiques (Hart, Leary, & Rejeski, 1989). The original measure consisted of 12-items, and showed high inter-item reliability ($\alpha = 0.90$) and high test-retest reliability (8-weeks later; $\alpha = 0.09$). The SPA showed a positive correlation to fear of negative evaluation, and negative correlations to body cathexis and body esteem.

A better fitting 9-item version of the original measure has been suggested (Martin, et al., 1997). In response to item 2's original negative wording, it has been worded more positively to better correlate with other items and to lessen confusion. Also, due to proposed issues with SPA being a single dimension factor, Eklund, Mack & Hart (1996) reevaluated the SPA and other potential factor structures. The investigators, utilizing a large, young female sample, suggest a model with 2 first-order factors and 1 second-order factor to represent the 12-items. The authors note that Factor 2 (items 4, 6, 7, 9, 10, 12) best represents SPA, while Factor 1 is a separate construct. Based on evaluation of the above arguments and present needs, this study utilized the 9-item unidimensional measurement of SPA (Martin et al., 1997; Appendix E). Alpha in the present study was $\alpha = 0.89$.

Exercise and Healthy Eating Efficacy

Self-efficacy to change body (lose weight and change body shape) through exercise or healthy eating (4 separate items) was developed for the current study. The two items were developed according to Bandura's (2006) recommendations for developing efficacy measures. In this respect, Bandura recommends creating domain-specific items specific to the area of interest, and use of a scale ranging from 0 to 100 in 10-point intervals. For exercise efficacy, the items asked "In general, how confident are you in your abilities to lose weight (alter body shape) with exercise". For healthy eating efficacy, the items asked participants, "in general, how confident are you in your abilities to lose weight (alter body shape) with healthy eating".

Weight Controllability, Changeability & Difficulty

For perceived controllability, a single 5-point Likert item asked *to what extent is your weight controllable?* (1=*not at all*, 5=*completely;* Blaine & Williams, 2004). A similar item assessed perceived changeability, *to what extent is your weight changeable?* Perceived controllability and changeability, which occur as one appraises the stressor, should relate to coping choice. In general, problem-focused efforts should be utilized in situations deemed more changeable, whereas emotion-focused coping are garnered in unchangeable situations (e.g. Folkman et al., 1986; Vitaliano et al., 1990). For weight loss difficulty, participants were asked two items on a 7-point Likert scale (1=*extremely easy*; 7=*extremely hard*) to rate their difficulty with weight loss and weight maintenance (Klem et al., 1997).

Body Dissatisfaction (Body Image Concern Scale)

The BICS (Ricciardelli & McCabe, 2002) was designed to assess one's level of dissatisfaction with body weight, body shape, muscle size, and muscle tone (1-item each).

Satisfaction was measured with on a 5-point scale from *extremely satisfied* to *extremely dissatisfied*. Internal reliability has been shown to range from 0.80 to 0.95.

Global Self-Esteem

Global self-esteem was measured through the single item self-esteem scale (Robins, Hendin, & Trzesniewski, 2001). This single item has been shown to be reliable and valid alternative to the commonly used Rosenberg self-esteem scale in several populations, including adults. In addition, self-esteem has been shown to be inversely associated with body dissatisfaction (Mellor, Fuller-Tyszkiewicz, McCabe, & Ricciardelli, 2010).

Chapter IV: Results

DESCRIPTIVE ANALYSIS

For this study, 470 women ages 18-35 (23.47 ± 3.81yrs) completed the online measures. Participants identified themselves as 67.7% White, 13.2% Hispanic, 8.9% Asian, 4.9% Black, and 5.3% Other. Body Mass Index (BMI) was calculated from self-reported height and weight (n=466), with a mean of 23.54 ± 4.86 $kg \cdot m^{-2}$. Further demographics based on BMI cutoffs, including distribution of participants, age and desired weight loss are shown Table 4.1.

	n	% of total	Age	Desired weight loss	% want to lose weight	% want to maintain weight
Underweight	21	4.5%	21.71(*2.95*)	-0.98(*3.76*)	14.3%	85.7%
Normal weight	321	68.9%	23.25(*3.56*)	-7.13(*5.69*)	62.0%	38.0%
Overweight	81	17.4%	23.80(*4.22*)	-20.49(*9.37*)	90.1%	9.9%
Obese	43	9.1%	25.40(*4.76*)	-50.44(*34.76*)	95.3%	4.8%
Total	466	100%	23.48(*3.84*)	-13.17(*17.80*)	67.9%	32.1%

Table 4.1: Demographic data by Body Mass Index (BMI) cutoffs

Note: Data expressed as means (*standard deviation*).
Desired weight loss is their ideal weight minus their current weight, expressed in pounds. A negative number represents the amount of weight desired to be lost.
The percent (%) wanting to lose or maintain weight represents the percentage in that respective BMI category.

CONFIRMATORY FACTOR ANALYSIS

Three items ("Smoke to help you control your appetite", "Utilize cosmetic surgery" and "Take laxatives to help you lose weight") were skewed (skew index = 3.61, 4.10 & 3.48, respectively), and no items had a kurtosis index greater than 20. Both the 1-factor and 4-factor CFAs exhibited poor model fit (Table 4.2).

	1-Factor CFA	**4-Factor CFA**	**Desired Indices**
Chi-Square	11639.32, p=0.00	9392.23, p=0.00	**p>0.05**
RMSEA (with 95% confidence intervals)	0.10 (0.095 – 0.099)	0.08 (0.083 – 0.086)	**<0.05, (below/within C.I.)**
CFI	0.36	0.51	**>0.90**
SRMR	0.13	0.12	**<0.05**

Table 4.2: Modification Indices for 1-factor & proposed 4-factor CFA

Factor loadings, error (residual) variances, and modification indices were examined to establish if a more parsimonious model could be determined. First, standardized factor loadings on the indicators were examined. This examination revealed that 8 factor loadings were below 0.30, and 11 loadings were below 0.40. No negative variances were found. Lastly, modification indices were requested from the MPLUS syntax. Due to the extremely poor model fit, 100 factor paths and 345 error covariances were suggested for inclusion. Few modification indices provided theoretically suitable alterations to the model. The lack of suitable suggestions, in addition to the poor model fit, a practical solution to produce a more parsimonious, better fitting model appeared futile. That is, it was clear that the 4-factor model was not best fitting model for the data and further post hoc respecification of the model was not attempted.

In summary, both the 1-factor and 4-factor models exhibited poor model fit. After trimming eight low factor loadings, modification indices were unable to shed light on theoretically relevant possibilities of improving model fit. Thus, an EFA was utilized next to establish the best fitting model to the data.

EXPLORATORY FACTOR ANALYSIS

Conducting an initial EFA with all 72 items, revealed 15 factors with an eigenvalue greater than 1 (Table 4.3, Figure 4.1). Upon further analysis, model fit was acceptable at 10 factors, which was also where the elbow on the scree plot began to flatten out. Also, only factors 1-10 had acceptable loadings on at least 2 items per factor. From this 10-factor model, trimming occurred in a step-wise fashion, re-running the EFA after each step. First, 6 items were trimmed due to loadings <0.30. These items were "tell yourself 'this isn't real'," make a special effort to appear thinner, so you can stay motivated," "turn to work or activities, other than exercise and physical activity, to take your mind off of things," "realize you brought the problem on yourself," "drink a lot of water," and "use home exercise equipment." Next, two items regarding "eating comfort foods to help oneself feel better" and "seeking emotional support from others" had negative variances and were deleted. The latter two items happened to be in factors that had only two items, which left only one item on each their associated factors. In response, all four items and the two factors were trimmed. The resultant factor structure contained 8 factors.

Next ten items were trimmed due to high cross-loadings. Finally, each item was examined with-regard to their theoretical relevance to the other items in their associated factor. Following this analysis, nine items were trimmed due to their theoretical mismatch with the factor's other items. Examples of this mismatch include "use techniques that help you improve the shape of your body" loading under Exercise/Physical Activity factor, "Make a promise to

yourself that things will be different the next time" under the Camo factor, or "Smoke to help you control your appetite" under the Disengage/Denial factor.

	Number of Factors									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Eigenvalue	*14.01*	*8.42*	*3.67*	*3.45*	*2.56*	*2.19*	*1.88*	*1.65*	*1.48*	***1.26***
Chi-square[a]	12152	8816	7496	6485	5639	5027	4442	3969	3653	**3358**
RMSEA	0.10	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.05	**0.04**
CFI[a]	0.35	0.57	0.65	0.72	0.77	0.81	0.84	0.87	0.89	**0.90**
SRMR	0.13	0.08	0.07	0.05	0.05	0.04	0.04	0.03	0.03	**0.03**

Table 4.3: Exploratory factor analysis eigenvalue & model fit indices

[a]All Chi-square statistics were significant at the 0.01-level. All CFI estimates fell within the 90% Confidence Interval.

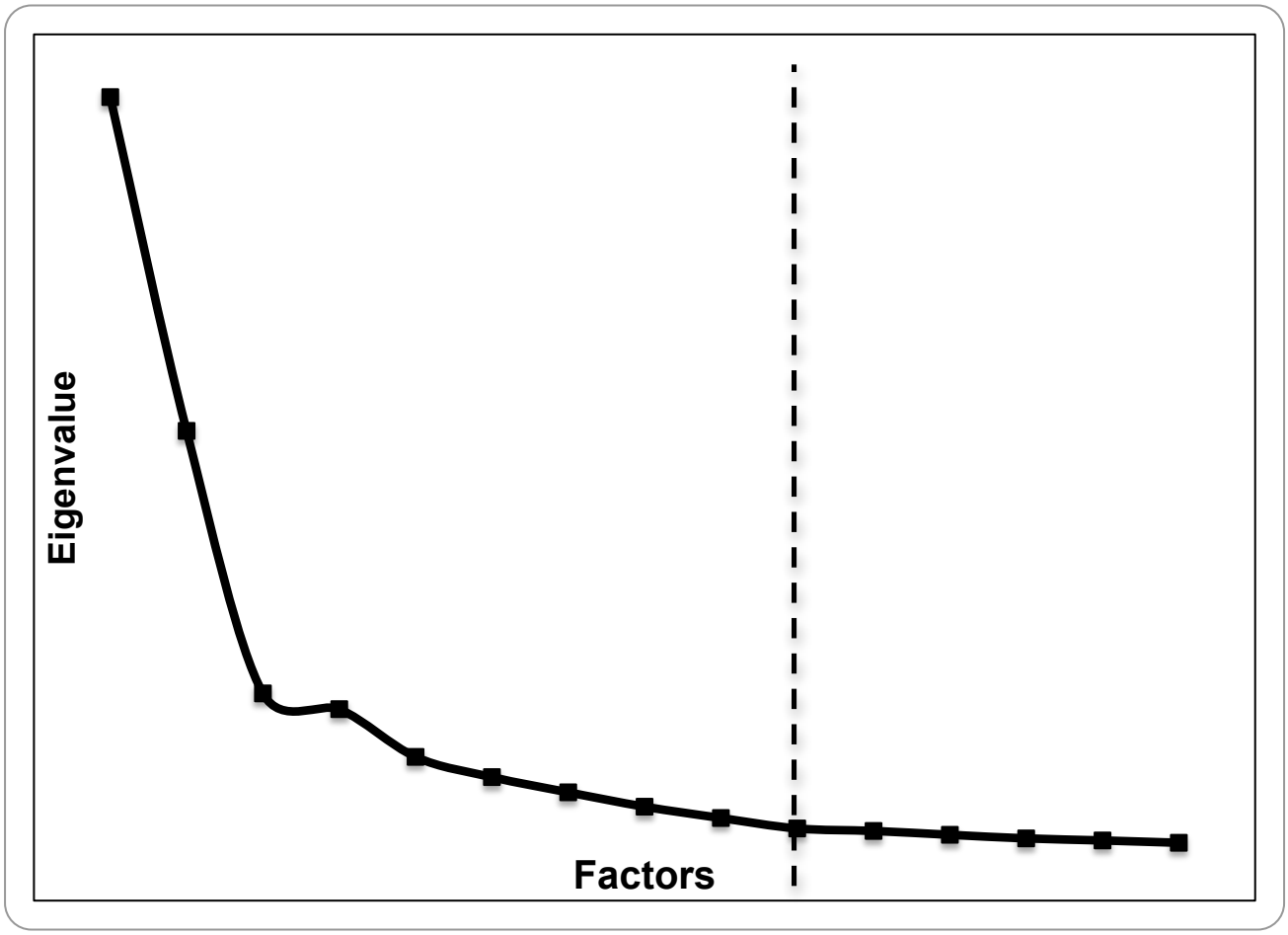

Figure 4.1: Scree Plot

At this point, a final long-form of the 8-factor WEIGHT-COPE had been reached (43 items), with no items to be trimmed due to their loadings or theoretical incongruence with the factor (Table 4.4). Two factors were derived from the original PFC+ factor, Exercise/Physical Activity and Healthy Eating. Two factors were derived from the original PFC– factors, Cut Calories/Appetite Suppression and Supplements. The remaining four factors were

Monitor/Planning, Camouflage (Camo), Disengage/Denial, and Acceptance/Positive Reframing. Descriptions of the 8-factors are described below.

	8-Factor (long-form)	8-Factor (short-form)
Chi-Square	1036.08, p=0.00, df=622	825.42, p=0.00, df=488
RMSEA (95% C.I.)	0.04, (0.035 – 0.044)	0.04, (0.036 – 0.046)
CFI	0.95	0.95
SRMR	0.02	0.02

Table 4.4: Model Fit Indices from EFA for 8-factor long- & short-form

In summary, examining eigenvalues and the scree plot, the EFA originally suggested 10 factors to model the data. After model trimming, a long-form of the WEIGHT-COPE of 8 factors, 43 items and acceptable model fit was established. These factors were labeled as Exercise/Physical Activity, Healthy Eating, Cut Calories/Appetite Suppression, Supplements, Monitor/Planning, Camouflage (Camo), Disengage/Denial, and Acceptance/Positive Reframing. Not all factors held a similar number of items, thus trimming for a short-form was pursued next.

WEIGHT-COPE SHORT-FORM

The Healthy Eating factor was composed of nine items, thus the four lowest-loading items were trimmed. Despite this trimming, the model fit indices confirmed acceptable model fit (Table 4.4). Also, the Healthy Eating factor still reflected enhanced eating behaviors, while eliminating potentially confusing items, e.g. "try to lessen portion size", "make sure not to over consume food". Two exceptions to this were the item "try not to think about it" in the Denial factor; and "increase efforts to monitor" in the Monitor factor. In both cases, all six items were retained despite these items having a loading <0.40. This was decided due to the theoretical

importance of these items as indicators of their associated factors. The final trimming resulted in a WEIGHT-COPE short-form of 40 items. This short form, due to its improved parsimony, was utilized for all following analyses.

RELIABILITY

Reliabilities for each factor are shown in Table 4.5. Coefficients (α) for each factor ranged from 0.71 to 0.89, and the entire scale (short-form) had a coefficient of 0.89. No item deletion would have significantly improved alpha.

	B	Mean(*SD*)	Skew	Kurtosis	Alpha
Factor 1: Physical Activity, Exercise		**4.47(0.*40*)**			**0.89**
1. Increase exercise efforts.	0.88	4.88(*1.60*)	-0.03	-0.83	
2. Turn to exercise or physical activity to take your mind off of things.	0.79	4.18(*1.87*)	-0.00	-1.14	
3. Go to the gym.	0.68	4.55(*2.03*)	-0.36	-1.20	
4. Find ways to become more physically active.	0.65	4.80(*1.59*)	-0.30	-0.82	
5. Try to do more weight training.	0.55	3.96(*2.02*)	-0.05	-1.30	
Factor 2: Healthy Eating		**4.96(0.*29*)**			**0.87**
6. Eat less junk food.	0.77	5.05(*1.66*)	-0.58	-0.58	
7. Limit eating sweet, high-fat foods.	0.72	4.79(*1.70*)	-0.46	-0.66	
8. Make healthier food choices.	0.71	5.37(*1.41*)	-0.65	-0.23	
9. Become more careful about what you eat.	0.65	5.05(*1.55*)	-0.52	-0.45	
10. Reduce intake of sugary foods & drinks.	0.63	4.57(*1.78*)	-0.25	-0.99	
Factor 3: Cut Calories, Appetite Suppression		**3.00(0.*73*)**			**0.86**
11. Skip meals	0.87	2.76(*1.87*)	0.87	-0.41	
12. Eat less than you probably should.	0.71	3.42(*1.97*)	0.40	-1.08	
13. Try to ignore your hunger.	0.66	3.26(*1.93*)	0.39	-1.11	
14. Find ways to suppress my appetite.	0.57	3.74(*1.87*)	0.25	-1.06	
15. Fast or go without food entirely.	0.56	1.85(*1.61*)	1.99	2.89	
Factor 4: Supplement		**1.67(0.*96*)**			**0.80**
16. Use weight loss supplements.	0.95	1.74(*1.48*)	2.17	3.84	
17. Use supplements to help you control food cravings.	0.74	1.87(*1.52*)	1.92	2.84	
18. Take medication to help you lose weight.	0.65	1.49(*1.28*)	2.89	7.67	
19. Utilize cosmetic surgery.	0.38	1.26(*0.81*)	4.10	19.22	
20. Use techniques to help lose water weight.	0.37	2.34(*1.69*)	1.27	0.65	
21. Take laxatives to help you lose weight.	0.34	1.40(*1.19*)	3.48	11.69	

Table 4.5: WEIGHT-COPE factor loadings (B), means, skew/kurtosis, alpha

Continued on next page.

	B	Mean(*SD*)	Skew	Kurtosis	Alpha
Factor 5: Monitor, Plan		**4.36(0.*35*)**			**0.84**
22. Make a plan of action to lose weight.	0.82	4.36(*1.90*)	-0.28	-1.07	
23. Try to come up with a strategy about what to do about your weight.	0.75	4.82(*1.74*)	-0.54	-0.66	
24. Start tracking and monitoring your calories.	0.52	3.79(*2.14*)	0.10	-1.33	
25. Set realistic weight loss goals for yourself.	0.50	4.42(*1.74*)	-0.29	-0.86	
26. Try to monitor the behaviors that you think will help you lose weight.	0.42	4.59(*1.72*)	-0.41	-0.64	
27. Increase attempts to monitor your weight.	0.37	4.26(*1.89*)	-0.22	-1.06	
Factor 6: Camouflage		**3.34(0.*32*)**			**0.84**
28. Make efforts to hide or disguise your weight, so you don't have to think about it.	0.82	2.95(*1.89*)	0.71	-0.68	
29. Try to disguise or "cover up your weight, until you can do something about it.	0.69	3.49(*2.00*)	0.32	-1.14	
30. Wear loose clothing, so you do not have to think about your weight.	0.66	3.22(*1.95*)	0.46	-1.00	
31. Try to distract others from your weight by highlighting other positive attributes, (e.g. face, smile, breasts, hair, etc).	0.53	3.69(*2.06*)	0.16	-1.28	
Factor 7: Disengage, Denial		**2.12(0.*54*)**			**0.71**
32. Give up trying to deal with your weight.	0.79	1.89(*1.36*)	1.86	3.16	
33. Avoid attempts to lose weight.	0.76	1.70(*1.16*)	2.17	5.02	
34. Pretend that it is not really happening.	0.46	1.71(*1.21*)	2.06	4.06	
35. Do nothing.	0.43	2.37(*1.73*)	1.18	0.39	
36. Try not to think about it.	0.37	2.96(*1.74*)	0.61	-0.49	
Factor 8: Acceptance, Positive Reframing		**3.17(0.*36*)**			**0.78**
37. Try to accept yourself as you are.	0.73	3.70(*1.74*)	0.16	-0.91	
38. Look for something good in what is happening.	0.70	3.04(*1.88*)	0.46	-0.78	
39. Learn to live with your weight.	0.64	2.93(*1.63*)	0.63	-0.37	
40. Try to see it in a different light, to make it seem more positive.	0.61	2.99(*1.74*)	0.52	-0.73	

Table 4.5: WEIGHT-COPE factor loadings (B), means, skew, kurtosis, & alpha.

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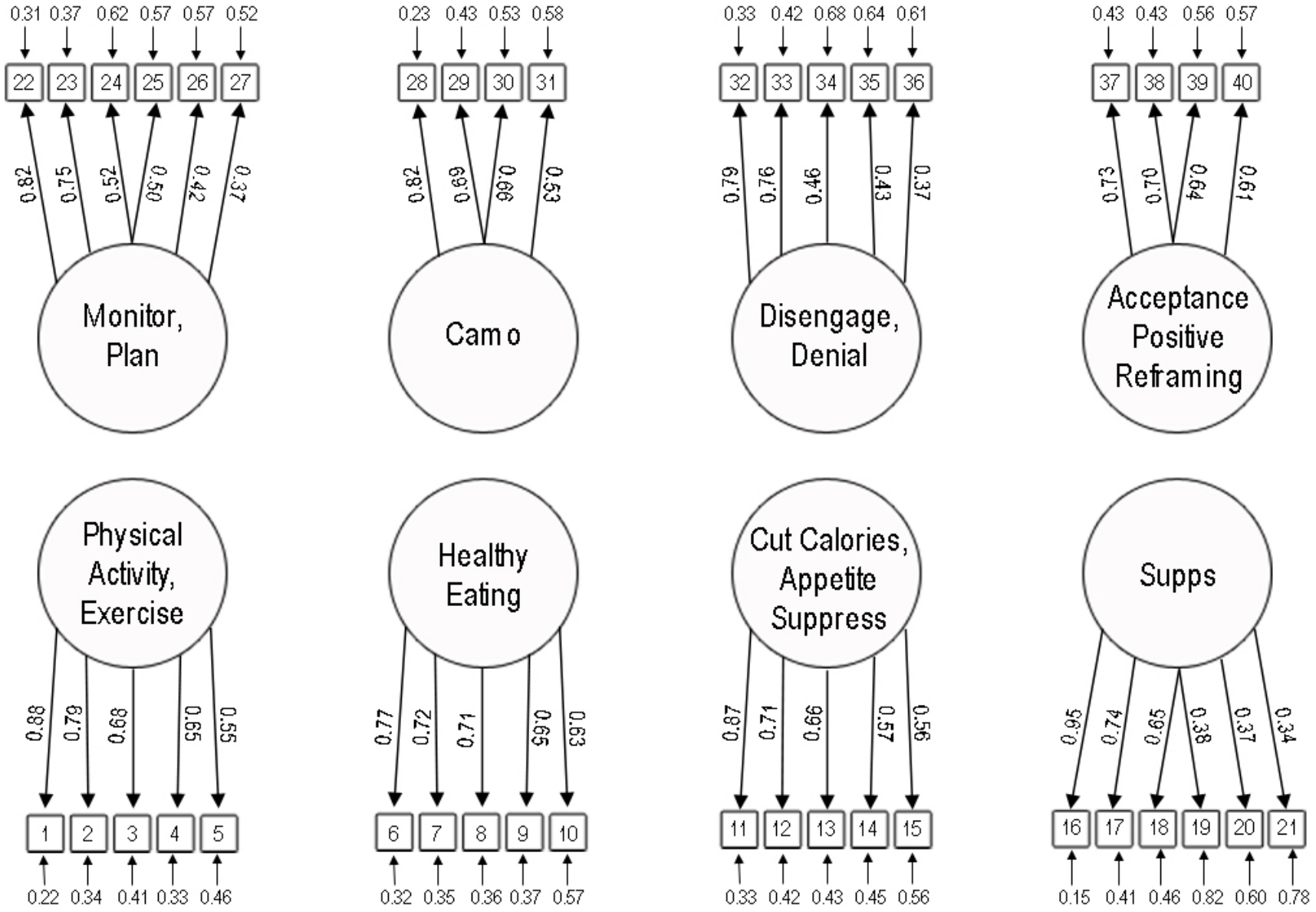

Figure 4.2: WEIGHT-COPE factor structure, rotated factor loadings & residual error variances.

FACTOR STRUCTURE & DESCRIPTIONS

Descriptions of the final 8 factors follow. Factor correlations are also shown in Table 4.6.

	Factors							
Factors	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Exercise, PA	--							
2. Healthy Eating	0.42**	--						
3. Cut Kcal, Suppress	0.11*	0.20**	--					
4. Supplements	0.10*	-0.00	0.37**	--				
5. Monitor, Plan	0.50**	0.39**	0.38**	0.25**	--			
6. Camo	0.01	0.01	0.36**	0.35**	0.28**	--		
7. Disengage, Denial	-0.13*	-0.14*	0.03	0.29**	-0.13*	0.19**	--	
8. Accept, Pos. Reframe	0.07	0.16**	-0.01	0.02	-0.05	0.13*	0.15**	--

Table 4.6: Rotated factor correlations (r)

* = Significant at 0.05-level (Est./S.E. >1.96)
** = Significant at 0.01-level (Est./S.E. >2.58)

Factor 1: Exercise, Physical Activity

All 5 items from the Exercise/Physical Activity factor expressed positive, problem-focused coping with weight dissatisfaction, steering individuals toward increased levels of exercise and physical activity. These items included increasing exercise efforts, going to the gym, finding ways to become more physically active and doing more weight training. Mean values of these items ranged from 3.96 – 4.88 on the 7-point scale, with a factor mean of 4.47 ± 0.40, and accounted for 51.69% of the variance in the items. As shown in Table 4.6, this factor was positively correlated with Healthy Eating (r=0.42) and Monitor/Planning (r=0.50). Small positive correlations were found with Cut Calories/Appetite Suppression (r=0.10) and Supplements (r=0.10). This factor also held a small negative correlation with Disengage/Denial (r=-0.13).

Factor 2: Healthy Eating

The Healthy Eating factor contained 5 items (long-form = 9 items) of positive problem-focused coping behaviors. This factor expressed coping behaviors of dietary control, such as reducing unhealthy foods (e.g. sugary, high fat, junk food), becoming more careful about what is eaten, lessening portion sizes, and being aware not to over consume food. Item means ranged from 4.58 – 5.36, with a factor mean of 4.96 ± 0.29, and accounted for 48.51% of the variance in the items. As shown in Table 4.6, this factor was most highly correlated with Exercise/Physical Activity (r=0.41), while also being positively correlated with Monitor/Planning (r=0.39). This factor also held small positive correlations with Cutting Calories/Appetite Suppression (r=0.20) and Acceptance/Positive Reframing (r=0.16). Finally, This factor was negatively correlated with Disengage/Denial (r=-0.14).

Factor 3: Cutting Calories, Appetite Suppression

Five items made up the Cutting Calories/Appetite Suppression factor. These items expressed negative problem-focused coping behaviors, such as appetite suppression, skipping meals, eating less than one probably should, and ignoring hunger. Item means ranged from 1.86 – 3.74, with a factor mean of 3.00 ± 0.73, and accounted for 46.31% of the variance in the items. This factor was slightly positively correlated with Exercise/Physical Activity (r=0.10) and Healthy Eating (r=0.19). This factor was more strongly correlated with Supplements (r=0.37), Camo (r=0.36), and Monitor/Planning (r=0.25).

Factor 4: Supplements

The Supplements factor included 6 items that suggest a negative form of problem-focused coping. These items described the use of weight loss supplements/medication to lose weight, including one item tapping into the use of cosmetic surgery. Item means ranged from 1.26 – 2.34, with a factor mean of 1.67 ± 0.96, and accounted for 38.96% of the variance in the items. Table 4.6 shows that this factor was mainly positively correlated with Cutting Calories/Appetite Suppression (r=0.37), Camo (r=0.35) and Disengage/Denial (r=0.29). This factor also held a modest positive correlations with Monitor/Planning (r=0.25) and a low, but significant, correlation with Exercise/Physical Activity (r=0.10).

Factor 5: Monitor/Planning

The 6 items that made up the Monitor/Planning factor focus on approach coping, theorized to allow the individual to move forward with problem-focused efforts. Specifically, these coping responses revealed monitoring behaviors, weight and calories in an attempt to lose weight. Planning items focused on trying to come up with a strategy, making a plan or setting

realistic weight loss goals. Item means ranged from 3.78 – 4.81, with a factor mean of 4.36 ± 0.35, and accounted for 34.48% of the variance in the items. As shown in Table 4.6, this factor held strongest correlations with Exercise/Physical Activity (r=0.50) and Healthy Eating (r=0.42). The factor was also positively correlated with Cutting Calories/Appetite Suppression (r=0.38), Supplements (r=0.25) and Camo (r=0.28), with a small negative correlation with Disengage/Denial (r=-0.13).

Factor 6: Camo

The Camouflaging (Camo) factor illustrated coping behaviors that allowed the individual to disguise, cover up, and hide their weight. As expressed by the items, these behaviors may be viable options to avoid doing anything about their weight, to not have to think about their weight, to emotionally cope with the discrepancy, or distract others from their perceived excess weight. Item means ranged from 2.96 – 3.69, with a factor mean of 3.34 ± 0.32, and accounted for 46.82% of the variance in the items. This factor held highest correlation with Cutting Calories/Appetite Suppression (r=0.36) and Supplements (r=0.35), with modest to low to modest correlation with Monitor/Planning (r=0.28), Disengage/Denial (r=0.19) and Acceptance/Positive Reframing (r=0.13). It should be noted that Camo was not significantly related to positive forms of problem-focused coping (i.e. Healthy Eating, Exercise/Physical Activity).

Factor 7: Disengage, Denial

The Disengage/Denial factor contained 5 items from the original Avoidance factor. These items expressed disengagement strategies, such as avoiding attempts to lose weight, giving up on trying to deal with their weight and trying not to think about it. The denial items within this factor expressed a strategy to pretend that it is not really happening. Item means ranged from

1.68 – 2.95, with a factor mean of 2.12 ± 0.54, and accounted for 34.39% of the variance in the items. As shown in Table 4.6, this factor was negatively correlated with Exercise/Physical Activity (r=-0.13), Healthy Eating (r=-0.14) and Monitor/Planning (r=-0.13). This factor was positively correlated with the use of Supplements (r=0.29) and Camo (r=0.19).

Factor 8: Acceptance, Positive Reframing

This factor contained a total of 4 items, with 2 items focused on acceptance and 2 items focused on positive reframing. The acceptance items revealed coping with weight dissatisfaction by accepting oneself as she is and learning to live with one's weight. On the other hand, positive reframing described coping strategies that allow the individual to see the situation in a positive light, or looking for something good in what is happening. Item means ranged from 2.93 – 3.70, with a factor mean of 3.17 ± 0.36, and accounted for 45.34% of the variance in the items. This factor held three small positive correlations with Healthy Eating (r=0.16), Camo (r=0.13) and Disengage/Denial (r=0.15).

VALIDITY

Spearman correlations (r_s) were calculated among the WEIGHT-COPE factors and other measures, including body image consciousness, weight satisfaction, weight controllability, weight changeability, weight cycling history, weight loss difficulty, social physique anxiety, self-esteem, self-efficacy to change weight through healthy eating and exercise, physical activity level, and dietary intake. The results are presented in Table 4.7.

Measure	Exercise PA	Healthy Eating	CutCal Suppress	Supps	Monitor Plan	Camo	Disengage Denial	Accept
Body Mass Index (n=461-466)	-0.08	-0.06	-0.03	0.08	0.16**	0.18**	-0.00	-0.01
Weight Satisfaction (n=461-467)	0.10*	0.09*	-0.25**	-0.25**	-0.22**	-0.34**	-0.06	0.20**
Weight Controllability (n=457-463)	0.14**	0.15**	-0.04	-0.10*	0.16**	-0.15**	-0.20**	-0.06
Weight Changeability (n=456-462)	0.16**	0.13**	-0.00	-0.04*	0.22**	-0.01	-0.20**	-0.07
Weight Loss Difficulty (n=461-467)	-0.02	-0.10*	0.15**	0.19**	0.15**	0.27**	0.06	-0.08
Weight Maintenance Difficulty (n=461-467)	-0.08	-0.12**	0.22**	0.17**	0.16**	0.28**	-0.00	-0.12**
Weight Cycling (n=313-317)	-0.04	-0.00	0.20**	0.24**	0.17**	0.22**	0.06	-0.15**
Desire Weight Loss (n=456-466)	0.08	0.04	-0.15**	-0.17**	-0.23**	-0.27**	0.00	0.08
SPA (n=457-463)	0.01	-0.04	0.39**	0.28**	0.31**	0.44**	0.06	-0.21**
Self-Esteem (n=464-470)	0.15**	0.10*	-0.19**	-0.09*	-0.04	-0.23**	-0.12**	0.23**
Self-Efficacy: healthy eating (n=460-466)	0.18**	0.40**	-0.10*	-0.09	0.08*	-0.19**	-0.21**	0.08
Self-Efficacy: exercise (n=460-466)	0.43**	0.28**	-0.08	-0.05	0.17**	-0.12**	-0.23**	0.07
Physical Activity Level (n=460-464)	0.36**	0.11*	0.16*	0.02	0.15*	0.02	-0.22**	0.04
Sedentary Time (n=460-464)	-0.13**	-0.09	-0.08	-0.11*	-0.02	-0.00	0.07	-0.08
Fruit & Vegetable Intake (n=458-462)	0.18**	0.18**	-0.01	-0.05	0.10*	-0.05	-0.04	-0.03
Fat & Sugar Intake (n=450-462)	-0.15**	-0.27**	-0.08	0.00	-0.12*	-0.03	0.07	0.03
OBCS: control beliefs (n=461-467)	0.26**	0.19**	-0.08	-0.06	0.15**	-0.13**	-0.36**	-0.09
OBCS: body shame (n=453-458)	0.04	-0.02	0.44**	0.34**	0.30**	0.35**	0.05	-0.21**
OBCS: surveillance (n=457-463)	0.06	0.04	0.44**	0.30**	0.34**	0.31**	-0.05	-0.25**

Table 4.7: Spearman correlations with the WEIGHT-COPE factors

SPA = Social Physique Anxiety
OBCS = Objectified Body Consciousness Scale
Self-Efficacy = "confidence in abilities to change weight through healthy eating/exercise"
Physical Activity Level = total hours of moderate-vigorous travel/leisure time activity per week
Fruit/Vegetable, Fat/Sugar Intake = Average servings per week
Weight Satisfaction = 1, Extremely Dissatisfied to 5, Extremely Satisfied
Desired Weight Loss = goal weight minus actual weight (the more negative, the more desired weight loss)
* = $p<0.05$; ** = $p<0.01$

Body Mass Index, Weight Satisfaction & Desired Weight Loss

Monitor/Planning (r_s=0.16) and Camo (r_s=0.18) were slightly positively correlated with BMI. For weight satisfaction, in which a higher score represented greater satisfaction, significant, but low, positive associations were found with Exercise/Physical Activity (r_s=0.10) and Healthy Eating (r_s=0.09). Also, based on moderate negative correlations, weight satisfaction was related with Cutting Calories/Appetite Suppression (r_s=-0.25), Supplements (r_s=-0.25), Monitoring/Planning (r_s=-0.22), and Camo (r_s=-0.34).

For desired weight loss, with a more negative number representing more desire weight loss, negative correlations were found with Cutting Calories/Appetite Suppression (r_s=-0.15), Supplements (r_s=-0.17), Camo (r_s=-0.27), and Monitor/Planning (r_s=-0.23).

Weight Controllability, Changeability, Difficulty, and Cycling

Weight controllability was positively related to Exercise/Physical Activity (r_s=0.14), Healthy Eating (r_s=0.15), and Monitor/Planning (r_s=0.16). The opposite is true for Supplements (r_s=-0.10), Camo (r_s=-0.15) and Disengage/Denial (r_s=-0.20), which are negatively related to weight controllability. Weight changeability was associated in the same fashion as controllability, with positive associations with Exercise/Physical Activity (r_s=0.16), Healthy Eating (r_s=0.13), and Monitor/Planning (r_s=0.22), and negative associations with Supplements (r_s=-0.04) and Disengage/Denial (r_s=-0.20).

Both difficulty in weight loss and maintenance were positively correlated with Cut Calories/Appetite Suppression (r_s=0.15, r_s=0.22), Supplements (r_s=0.19, r_s=0.17), Camo (r_s=0.27, r_s=0.28), and Monitor/Planning (r_s=0.15, r_s=0.16). Both weight loss and maintenance difficulty were negatively correlated with Healthy Eating (r_s=-0.10, r_s=-0.12). Weight maintenance difficulty was negatively correlated to Acceptance (r_s=-0.12), but not weight loss difficulty.

Weight cycling was only positively correlated with Cutting Calories/Appetite Suppression (r_s=0.20), Supplements (r_s=0.24), and Camo (r_s=0.22) coping strategies.

Social Physique Anxiety, Self-Esteem and Self-Efficacy

Social Physique Anxiety was positively correlated with Cutting Calories/Suppression (r_s=0.39), Camo (r_s=0.44), Monitor/Plan (r_s=0.31), and Supplements (r_s=0.28). Social Physique Anxiety held its only negative correlation to Acceptance/Positive Reframing (r_s=-0.21).

Global Self-Esteem was positive correlated with Exercise/Physical Activity (r_s=0.15), Healthy Eating (r_s=0.10), and Acceptance/Positive Reframing (r_s=0.23). Self-esteem was negatively related to Cutting Calories/Appetite Suppression (r_s=-0.20), Supplements (r_s=-0.09), and Camo (r_s=-0.23) coping strategies.

Self-Efficacy was measured with two items, as the confidence in abilities to change weight with healthy eating and exercise, respectively. Both items related similarly with positive correlations to Exercise/Physical Activity (r_s=0.18, r_s=0.43), Healthy Eating (r_s=0.40, r_s=0.28), and Monitoring/Planning (r_s=0.08, r_s=0.17). On the other hand, self-efficacy was negatively related to Cutting Calories/Appetite Suppression (r_s=-0.10, r_s=-0.08), Camo (r_s=-0.19, r_s=-0.12), and Disengage/Denial (r_s=-0.21, r_s=-0.23) coping strategies.

Physical Activity Level and Dietary Intake

Higher levels of MVPA were positively associated with Exercise/Physical Activity (r_s=0.36), Healthy Eating (r_s=0.11), Cutting Calories/Appetite Suppression (r_s=0.16), and Monitor/Planning (r_s=0.15) coping strategies. Moderate-to-vigorous physical activity was negatively related to Disengage/Denial coping efforts (r_s=-0.22). Sedentary time held small negative correlations with Exercise/Physical Activity (r_s=-0.13) and Supplement (r_s=-0.11)

coping behaviors. More sedentary individuals appeared to make little use of any of the coping strategies.

Consuming fruits and vegetables was positively related to Exercise/Physical Activity (r_s=0.18), Healthy Eating (r_s=0.18), and Monitor/Planning (r_s=0.10). On the other hand, those who ate less healthfully, as measured by consumption of high fat and high sugar foods, reported lower levels in Exercise/Physical Activity (r_s=-0.15), Healthy Eating (r_s=-0.27), and Monitor/Planning (r_s=-0.12) problem-focused coping strategies.

Objectified Body Consciousness Scale

Finally, the WEIGHT-COPE factors were analyzed against the three OBCS factors. Control Beliefs were positively correlated with Exercise/Physical Activity (r_s=0.26), Healthy Eating (r_s=0.19), and Monitor/Planning (r_s=0.15). This control one feels over how their body looked, was negatively related to Camo (r_s=-0.13), and Disengage/Denial (r_s=-0.36) coping strategies.

Body Shame was moderately positively correlated with Cutting Calories/Appetite (r_s=0.44), Supplements (r_s=0.34), Camo (r_s=0.31), and Monitor/Planning forms of coping (r_s=0.31). On the other hand, Body Shame was inversely associated with Acceptance/Positive Reframing (r_s=-0.21).

Surveillance was correlated with Monitor/Planning (r_s=0.34). Also, similarly to Body Shame, those that watch their body more frequently tend to report higher usages of Cutting Calories/Appetite (r_s=0.44), Supplements (r_s=0.30), and Camo (r_s=-0.31). In addition, those that had an increase in levels of Surveillance reported less use of Acceptance/Positive Reframing (r_s=-0.25).

HIGHER ORDER FACTORS & STRUCTURAL REGRESSION

Results from the Structural Regression model are shown in Figure 4.3. Only significant relationships ($p<0.01$) are shown in the model. Acceptance/Positive Reframing had a positive relationship with Disengage/Denial ($\beta=0.20$). However, coping with Acceptance/Positive Reframing did not have any relationship with pursuing Monitor/Planning ($\beta=0.00$). Following the theoretical pattern, Monitor/Planning then had positive relationships with PFC+ ($\beta=0.78$), PFC– ($\beta=0.68$), and Camo ($\beta=0.40$) coping behaviors. Monitor/Planning was supported here to be an approach-oriented coping response, however this approach did not necessarily have to be geared toward positive behaviors, as increased self-monitoring and planning was related to engagement in PFC- or Camo behaviors. Disengage/Denial had a negative relationship with PFC+ ($\beta=-0.24$), as theorized, although this factor also had a positive relationship with PFC– ($\beta=0.26$) and Camo ($\beta=0.40$). Based on these results, Figure 1.4 has been expanded to contain the new WEIGHT-COPE factors and results from the SR model (see Figure 4.3).

Exercise/Physical Activity and Healthy Eating factors were included as a single higher order factor (PFC+). Due to their theoretical grouping as healthy weight loss behaviors, this higher order factor was deemed appropriate. The use of this higher order factor was supported by acceptable loadings of Exercise/Physical Activity (0.76) and Healthy Eating (0.73) on PFC+. Similarly, a higher order factor of the unhealthy weight loss behaviors (Cutting Calories/Appetite Suppression and Supplements) was created (i.e. PFC–). The use of this higher order factor was supported by acceptable loadings of Cutting Calories/Appetite Suppression (0.75) and Supplements (0.58) on PFC–.

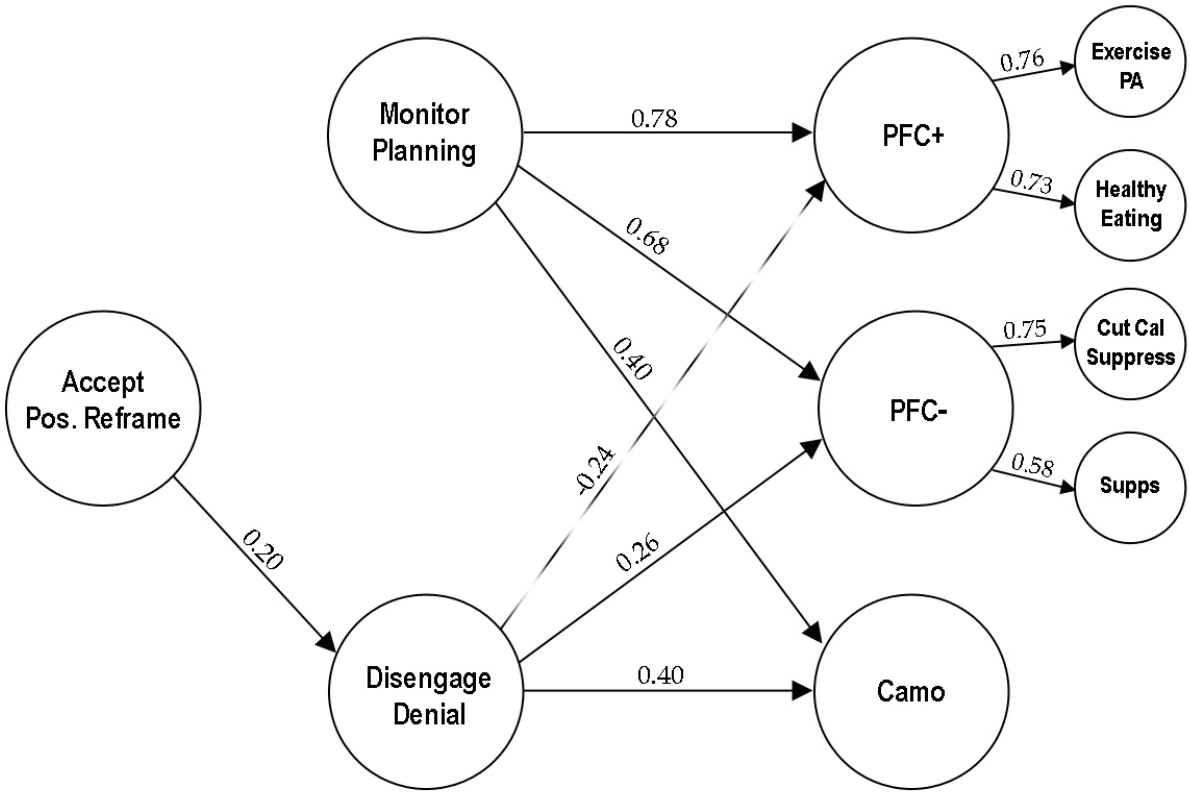

Figure 4.3: Structural regression with WEIGHT-COPE factors

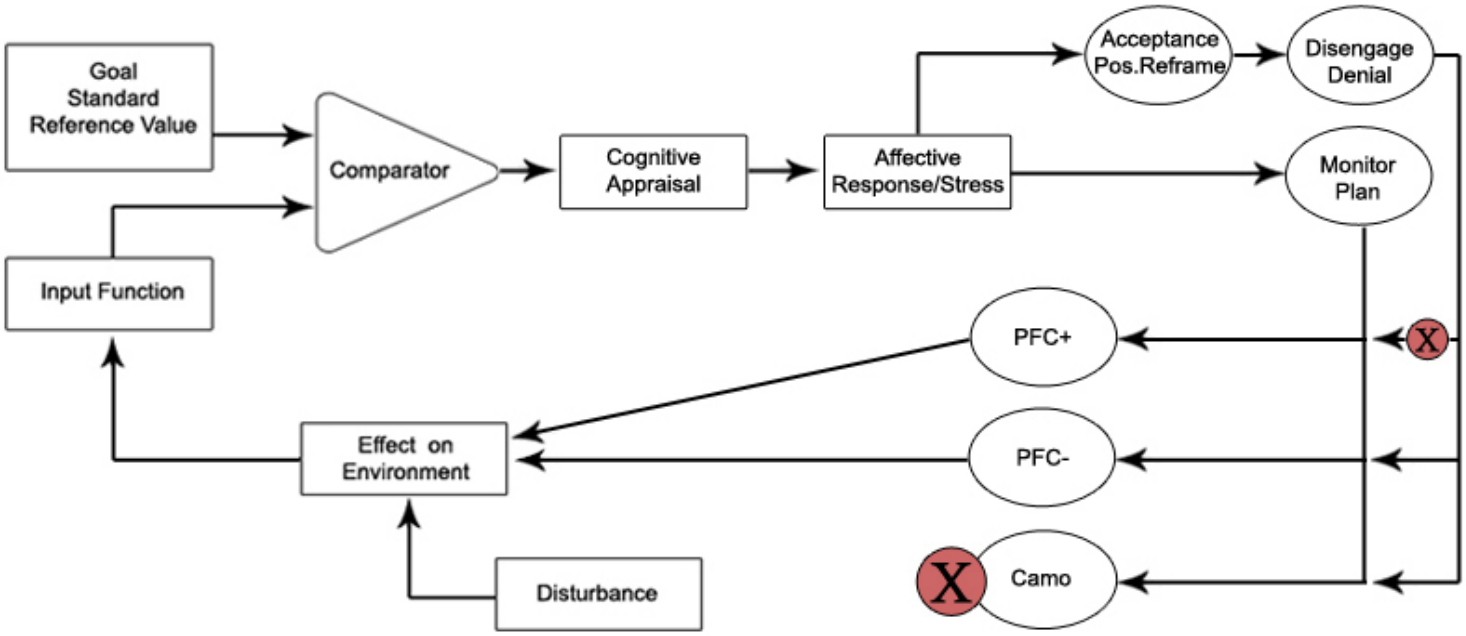

Figure 4.4: Final WEIGHT-COPE Schematic (extended from Figure 1.4).

Chapter V: Discussion

The present research sought to develop a reliable and valid measure (i.e. WEIGHT-COPE) to assess coping responses specifically to weight-related body discrepancy in women. Weight-related discrepancies are common, and are prone to produce negative affective responses, e.g. dissatisfaction and perceived stress. Based on both the Transactional Model of Stress and Coping (Folkman & Lazarus, 1985) and Self-Regulation Theory (Carver & Scheier, 2001), individuals are expected to apply a coping response. Of course, there are a number of ways to cope, and the WEIGHT-COPE was designed to capture these common coping behaviors.

A 4-factor structure was originally hypothesized to describe the coping responses to weight-related dissatisfaction. The proposed model contained two problem-focused coping responses (i.e. weight loss efforts) with a positive or negative relationship to health (PFC+ and PFC−, respectively), an Approach factor thought to enhance problem-focused behaviors, and an Avoidance factor theorized to diminish problem-focused coping efforts. To test these hypotheses, 470 female participants were recruited and voluntarily completed a series of online measures, including 72 items that were analyzed in a CFA, to determine fit with the hypothesized 4-factor structure. The result of this CFA was poor fit, with no meaningful modifications apparent to improve model fit. Thus, all of the original hypotheses for the present study were not able to be adequately answered. In response, the analysis moved on to exploratory methods to determine the

best factor structure for the data. The final results revealed an 8-factor model to describe the coping responses to weight dissatisfaction.

The findings from the EFA were a more detailed view of the original 4-factor structure, and remained in line with original theoretical underpinnings. From these 8 factors, 4 were problem-focused in nature and two were deemed positive or healthy problem focused coping (PFC+): (1) *Exercise/Physical Activity* and (2) *Healthy Eating*. The other two problem-focused factors were deemed negative or unhealthy responses (PFC–), (1) *Cutting Calories/Appetite Suppression* and (2) *Supplement use*. *Monitor/Planning* was labeled as approach with *Disengage/Denial* labeled as avoidance. *Camo* was a coping behavior describing methods of disguising, hiding or covering up weight. The final factor, *Acceptance,* containing both acceptance and positive reframing items, and was deemed an emotion-focused coping strategy for affect regulation. The factors are discussed in more detail below.

THE WEIGHT-COPE & ITS FACTORS

Exercise, Physical Activity

This factor described coping behaviors, such as increasing exercise, physical activity, and weight training efforts. All items, except one, were of the original PFC+ factor. The Exercise/Physical Activity factor was moderately correlated with both Healthy Eating and Monitor/Planning. So, those individuals that chose to increase physical activity levels appear to also endorse eating healthier to cope and monitoring or making a plan of action. The concurrent positive relationship of physical activity and

healthy eating has been previously acknowledged in adolescents (e.g. Pate, Heath, Dowda, & Trost, 1996), and in adults (e.g. Trost, Woen, Bauman, Sallis & Brown, 2002).

Examining correlations with other measures (Table 4.7), this factor held modest positive relationships with self-reported moderate-vigorous physical activity levels, and a negative correlation with sedentary time. These relationships lend support for validity of the factor, while also emphasizing the positive relationship of regular physical activity with problem-focus coping within occurrences of weight-related dissatisfaction. The factor was also positively correlated with self-reported fruit and vegetable intake and negatively related to average fat and sugar intake. These relationships emphasize the common positive relationship between physical activity and dietary control/healthy eating.

The Exercise/Physical Activity factor was also positively correlated with self-efficacy to change weight through exercise. This is intuitively appealing, as those that were higher in exercise efficacy also reported utilizing exercise as a coping response to weight-dissatisfaction. Fortunately, higher exercise self-efficacy has been shown to be a successful predictor of long-term weight loss (Teixeira et al., 2004). In addition, there was a modest correlation with control beliefs from the OBCS. Control beliefs express the level of control one feels she has on how her body looks; and those that feel they had a general level of control over their bodies reported the use of exercise as a coping strategy.

All significant negative correlations to Exercise/Physical Activity were low ($r<0.15$), including sedentary time and fat/sugar intake. This factor was not correlated to weight loss difficulty, past weight-loss cycling, desired weight loss, SPA, body shame or

surveillance. These negative cognitions may then be unrelated in those who endorse exercise as a coping response. This pattern of associations is consistent with the extant literature. For example, SPA has previously been found uncorrelated to frequency of aerobic or strength training exercise (Russell & Cox, 1995), while individuals that engage in more exercise may not be concerned with how their body is evaluated, thus decreased SPA (Lantz, Hardy, & Ainsworth, 1997). In contrast, Exercise/Physical Activity was positively related to a more global measure of self-esteem. This reflects work by Teixeira and colleagues (2002), who found self-esteem impacting weight loss response to a 4-month weight loss program, with participants with lower self-esteem seeing less weight loss.

Healthy Eating

This factor described coping behaviors that surround dietary control such as eating less junk or unhealthy foods (e.g. high fat, high sugar, sweets), and making more careful, healthier food choices. The Healthy Eating factor was positively correlated with both Exercise/Physical Activity and Monitor/Planning. These relationships indicated that those that cope with enhanced dietary control also cope with increases in physical activity and exercise. These relationships mirror those in the literature mentioned in the previous section. In addition, self-monitoring and planning coping strategies have been highlighted in the literature as effective techniques within healthy eating and physical activity interventions (Michie, Abraham, Whittington, McAteer, & Gupta, 2009).

The Healthy Eating factor showed other positive relationships with participants' current fruit and vegetable intake and negative correlation to current fat and sugar intake. In other words, individuals that were successfully eating more healthfully, while limiting intake of high fat and high sugar foods, also reported utilization of dietary control in the midst of weight-related dissatisfaction.

There was a positive correlation with self-efficacy to change weight through healthy eating and exercise. This makes practical sense, in that those with confidence in their abilities to change their weight with healthy eating in fact chose to eat healthier to problem-focus cope. In addition, there is evidence that programs that can produce changes in eating self-efficacy see greater associations with weight reduction (Teixiera et al., 2005).

Weight controllability and changeability were modestly related to Healthy Eating, as was a negative correlation with difficulty in weight loss and maintenance. These patterns of effects were expected. When weight is not perceived to be controllable individuals may choose to neither control their diet nor lose weight (Wamsteker et al., 2005). Likewise, higher eating disinhibition has been linked to weight gain (e.g. Hays et al., 2002). Desired weight loss was not related to this factor.

The positive relationship found between this factor and self-esteem supports previous findings that enhanced self-esteem allowed individuals to utilize problem-focused forms of coping (e.g. Terry, 1994). Problem-focused coping is unique, in that there are positive and negative relationships to health, as previously discussed. Self-esteem appeared to only be positively related to more positive forms of problem-focused

coping (i.e. Healthy Eating, Exercise/Physical Activity), as it held negative relationships to negative forms of problem-focused coping (i.e. Cutting Calories/Appetite Suppression, Supplements, & Camo).

Cutting Calories, Appetite Suppression

This factor described negative problem-focused coping behaviors, such as appetite suppression, skipping meals, eating less than one probably should, and ignoring hunger. Coping by cutting calories to an extreme or suppressing appetite was positively related to body shame, SPA, and body surveillance. Body shame results when one does not reach a perceived standard for body image and respond with harsh, self-judgment (McKinley, 1996). SPA assesses a person's worry concerning public evaluation of their physique (Hart, Leary & Rejeski, 1989). It is possible that feelings of shame and concern may, in turn, influence the selection of drastic diet strategies.

Likewise, increased monitoring or surveillance can also increase the opportunity to feelings of shame, and risk of utilizing such a quicker, easier weight loss coping strategy. For example, there is a risk of arousing negative affective responses through disruptive forms of self-monitoring, especially when goal-directed behavior has become automated (Karoly, 1993). Thus, it is not surprising that this pattern of effects support those by McKinley (1996), who found body shame and surveillance to be significant contributors to restricted eating. Likewise, it is not surprising that SPA is considered a risk factor for and predictive of disturbed eating attitudes and disordered eating in

women, even in athletes (e.g. Diehl, Johnson, Rogers, & Petrie, 1998; Haase, 2009; Haase & Prapavessis, 1998; Reel & Gill, 1996).

This factor was negatively correlated with weight satisfaction, indicating that the more satisfied in one is with her own weight, the less reported use of cutting calories or suppressing of her appetite as a coping response. Similarly, this factor was also negatively related to both self-esteem and desired weight loss. Those women that promote use of this coping strategy, report lower levels of self-esteem and concurrently desire greater weight loss.

The items from the Cutting Calories/Appetite Suppression factor were worded in an attempt to separate unhealthy cutting or suppression of calories from limiting caloric intake due to more healthy food choices. There is slight support for this effort with the low negative correlation of the factor to self-efficacy to lose weight through healthy eating. However, this factor was also modestly positively correlated with Healthy Eating factor. It may be that the distinction between cutting calories in a healthy or unhealthy manner is small and subtle. For example, Roberts and colleagues (2001) found that adolescent girls defined "dieting" as both eating less or cutting calories, and eating healthy food (e.g. increasing consumption of fruit, vegetables and salads); and caloric restriction is heavily used (63% - 75%; Kruger et al., 2004; Weiss et al., 2006). This apparent confusion in "dieting" or "cutting calories" places people at risk for unhealthy dieting and may, therefore, be a valuable target for nutrition education and future research.

Supplements

This factor described coping behaviors, such as the use of weight loss supplements/medication to lose weight, including one item tapping into the use of cosmetic surgery. Similar to the Cutting Calories/Appetite Suppression factor, Supplements were positively correlated with body shame, surveillance and SPA. As with those relationships, the affective response (e.g. shame, anxiety) may steer individuals to more quick weight loss methods, even at risk of one's own health (Leary, Tchividjian, & Kraxberger, 1994). For example, while supplement use has been shown to reach 20% in adult women overall, use is up to nearly 30% in young obese women (Blanck, Khan, & Serdula, 2001; Blanck et al., 2007). Also, as shown here, use of supplements was negatively correlated with weight satisfaction, indicating the higher one's satisfaction in weight, the less she reports use of supplement use to cope. Pre-existing positive attitudes toward supplements and perceived behavioral control may also impact the intention to use the supplements (Conner, Kirk, Cade, & Barrett, 2001).

Monitor/Planning

This factor described approach coping behaviors, such as monitoring behavior, weight change and calories in an attempt to lose weight. Planning items focus on trying to come up with a strategy, making a plan or setting realistic weight loss goals. Being an approach strategy, Monitor/Planning was positively correlated with all forms of problem-focused coping in the WEIGHT-COPE (i.e. Exercise/Physical Activity, Healthy Eating, Cutting Calories/Appetite Suppression, Supplements), along with tactics to disguise one's

weight (i.e. Camo). In other words, an increase in self-monitoring or planning does not ensure that an individual will choose any specific form of weight loss behavior; with a specific choice likely based on their specific efficacy for any approach (Folkman, 1984). Thus, while monitoring may be beneficial – e.g. monitoring and planning are reported in significantly higher levels in regular exercisers than in irregular exercisers (Karoly et al., 2005); they may also be disruptive in some individuals, as monitoring can produce saliency to a discrepancy, thus arouse negative affective responses (Karoly, 1993). As previously stated with self-regulation, negative affect is motivating to try harder or change behavior, without necessarily ensuring that the behavioral choice is healthy or unhealthy.

Monitor/Planning was negatively correlated to Disengage/Denial suggesting that individuals that chose to increase self-monitoring or planning to lose weight, reported less use of disengagement from their efforts. Similarly, development of the COPE scale revealed a significant negative correlation between monitoring and behavioral disengagement (Carver, Scheier, & Weintraub, 1989). This relationship may be why self-monitoring, goals, and planning have been found to be effective techniques within interventions to improve physical activity and healthy eating (Michie, Abraham, Whittington, McAteer, & Gupta, 2009). .

Not surprisingly, Monitor/Planning was also positively correlated with Control Beliefs from the OBCS. Individuals that felt they had more control over their bodies also were more likely to report increase use of this form of coping. Also, this factor was positively related to Body Shame and Surveillance from the OBCS. This relationship

expresses similar assumptions found by Carver and colleagues (1989) in the development of the COPE measure. As stated, "Perhaps monitors, as part of their vigilance, are especially alert to any distress emotions they are experiencing," (pg. 276). Here, those that monitor more, may be more aware of their weight, and experience more shameful feelings about themselves and their body.

Body shame may also provide a source of motivation to monitor and plan. Thus, the only negative correlations to Monitor/Planning were found with weight satisfaction and desired weight loss, indicating that higher weight satisfaction and greater weight loss was related to lower use of this coping tactic. The modest correlation with Surveillance suggests that these individuals watch their bodies more frequently. This relationship provides validity support that Monitor/Planning is in fact tapping into increased monitoring tactics.

Camouflage

This factor described coping behaviors designed to cover up, disguise or distract others from one's weight, usually with the use of clothing. The negative correlations of Camo to weight satisfaction and desired weight loss, along with positive correlations with weight control issues, suggests that those reporting higher dissatisfaction and less control of weight, also reported use of these camouflaging techniques as a coping method. These findings are supportive of previous research that has linked dissatisfaction with weight and body to increased use of camouflaging techniques and/or avoidance of more revealing clothing (Clark, Giffin, & Maliha, 2009; Kwon & Parham, 1994; Tiggemann &

Lacey, 2009). Those participants reporting higher levels of SPA and lower self-esteem also reported higher use of Camo. As suggested in previous findings (e.g. Kwon, 19911; Kwon & Shim, 1999), participants in this study may be turning to Camo tactics and coping to lessen negative mood states and self-consciousness. More support of this assumption comes from Camo's positive correlations with body shame and surveillance efforts from the Objectified Body Consciousness Scale.

There were no relationships of Camo to self-reported levels of physical activity or dietary control variables, although negative correlations with physical activity and healthy eating efficacy were found. Thus, the use of Camo as a coping strategy are the same participants that how low exercise and healthy eating efficacy, higher weight control difficulty, more weight dissatisfaction, greater SPA and lower self-esteem.

There was also little indication that Camo was used in conjunction with PFC+ with no correlations to both Exercise/Physical Activity and Healthy Eating coping strategies. Rather, with positive correlations to Cutting Calories/Appetite Suppression, Supplements, Disengage/Denial and Acceptance/Positive Reframing, Camo appears to be utilized along with negative problem-focused behaviors and emotional strategies.

Disengage, Denial

This factor described a general coping strategy based on withdrawal of effort to deal with a stressor, such as giving up on trying to deal with their weight, and trying not to think about it. The denial strategies express coping by pretending that it is not really happening and can lead to giving up on goal pursuits entirely (Carver, Scheier, &

Weintraub, 1989). Denial allows the individual to negate the situation, refusing to believe that the stressor exists or is not real (Carver, Scheier, & Weintraub, 1989; Lazarus, 1983). Denial is considered a coping defense mechanism that is "an excessive effort" to try to maximize the positives and minimize the negatives (Salamon, 1994). Denial and Disengagement have been previously shown to be positively correlated with each other, and negatively correlated with both planning and problem-focused coping (Carver, Scheier, & Weintraub, 1989).

Based on these views, Disengage/Denial was considered an avoidance strategy in a time of stress stemming from a weight-related discrepancy from one's perceived standard. These views were supported through correlations with other factors. Those individuals that endorsed disengagement from or denial of the situation reported less coping use through Exercise/Physical Activity and Healthy Eating, while higher attempts to cope with Supplements and Camo. Similarly, those that reported higher physical activity levels, reported less use of Disengage/Denial. This coping response may stem from the heightened negative emotional response to the discrepancy and/or the negative relationship to self-efficacy to change one's weight through exercise and healthy eating. Thus, this factor held the greatest negative correlations to efficacy beliefs. In addition, such relationships could be influenced by the weight status and/or currently physical activity level of the individual. An individual that is currently active may or may not need to purse more physical activity in these times of dissatisfaction. Also, a normal weight individual may choose to disengage from the monitoring process, as the dissatisfaction may direct them to weight loss efforts, when weight loss is not needed.

Similarly, this factor was negatively correlated with weight controllability, weight changeability and control beliefs form the OBCS. Those individuals that were not efficacious in either exercise, healthy eating, weight controllability, and weight changeability also reported coping by disengaging and/or denying that the situation existed. This is, in fact, the primary role of denial as a form of coping (Lane, Jones, & Stevens, 2002).

Acceptance, Positive Reframing

This factor described coping behaviors, such as accepting oneself as how they are (acceptance), learning to live with their weight (acceptance), seeing the situation in a positive light (positive reframing), or looking for something good in what is happening (positive reframing). Like Monitoring / Planning, Acceptance/Positive Reframing was positively correlated with both positive and negative coping options: Healthy Eating, Camo and Disengage/Denial factors. Despite this, Acceptance / Positive Reframing was also positively related to one's self-esteem and weight satisfaction, which have been associated with decreased motivation to lose weight (Kuk et al., 2009). This link was supported in the structural regression model (Figure 4.3), with Acceptance/Positive Reframing driving disengagement from weight loss efforts. In addition, Acceptance/Positive Reframing was negatively correlated with SPA, Body Shame and Surveillance. It appears then that those coping in this manner also report more satisfaction with their weight, less body shame, and anxiety in social situations.

The acceptance and positive reframing items were written to reflect different, underlying constructs: i.e. with acceptance leading to reduced engagement with weight loss efforts, and positive reframing expected to increase engagement with positive coping behaviors. It was, therefore, surprising that these appear to be based on the same, underlying latent factor. Upon further reflection of the literature, this may be due to their abilities to regulate affect. Both acceptance and positive reframing (i.e. positive reappraisal, positive reinterpretation) are thought to be utilized to manage the emotional distress of the situation, by enhancing positive affect, seeing the situation in a positive light, and allowing for further growth (Carver, Scheier & Weintraub, 1989; Folkman, 1997; Folkman & Moskowitz, 2000). For example, Folkman (1997) found that Positive Reappraisal was positively correlated with both negative affect and planful problem solving in those coping with severe stress of a dying loved one. Similarly, the COPE scale found their Positive Reinterpretation & Growth factor to be positively correlated with Planning coping strategies (r=0.27).

It should be noted here that Acceptance and/or Positive Reframing, like Disengagement from monitoring, could hold varied effects depending on the weight classification and/or current healthy behavior status of the individual. An individual that is currently physically active and eating healthy may be better suited to enact these coping responses with their perceived weight issues. Such coping may allow them to retrieve a more positive frame of mind as they continue in their healthy behavior endeavors, and perhaps deflect opportunities for negative problem-focused behaviors.

Similarly, underweight and certain on-weight individuals may not need to lose weight and may be better off accepting their weight, so as not to pursue weight loss behaviors.

This coping response may be different in an on-weight individual (by BMI) that is not currently active or eating healthy, as such coping may steer them toward being more active and eating healthier. Even on-weight individuals, as indicated by BMI, could benefit on numerous levels from physical activity and healthy eating, including health and body satisfaction, due to the pursuance of these healthy behaviors. Weight classification does not necessarily determine the health status or even the current use healthy behaviors, level of fitness or mortality risk of an individual, rather is simply a ratio of their weight to height (see Blair & Brodney, 1999; Deurenberg-Yap, Chew, & Deurenberg, 2002; Frankenfield et al., 2001; Prentice & Jebb, 2001).

Thus, there may be women who are normal weight by BMI, but still want to lose weight in a healthy manner. As mentioned, attractiveness is proposed as a powerful driving force behind weight loss efforts, and does not necessarily mean that individuals will pursue unhealthy weight loss behaviors. Despite being normal weight, these individuals could still pursue weight loss behavior to decrease weight, and remain in a desired BMI range. Also, such weight loss efforts may be geared toward body composition changes, which may or may not impact scale weight. Examples such as these are merely hypothetical and speculative at the present time, and future research should examine the differences amongst these scenarios. These points are conclusions that cannot be drawn from the present study, which only sought to initially determine how women across all weight classifications commonly cope with weight-related

dissatisfaction, with no determination on whether the choices were proper for certain women and not others.

SUPPORT FOR VALIDITY

As noted, there were some relatively small correlations that existed between the factors and other pertinent measures. Despite being small, they were in the predicted direction, lending support that the WEIGHT-COPE factors were in fact measuring what they were stated to measure. Correlations vary in magnitude based on the sample size of that variable. Specifically the magnitude of the correlation will decrease as the sample size increases. Thus, in large sample sizes such, such as the present sample, the magnitude may appear small, but still be a significant and impactful correlation between two variables. As stated, based on a power estimate of 0.80 at an alpha level of 0.05, a significant correlation with present sample size, a correlation value of approximately equal to or greater than 0.11 was considered significant. In addition, within behavioral research, correlations labeled as "small" can be arbitrary and not fully informative on the practical importance of the effects (Rosenthal, Rosnow, & Rubin, 2000).

STRUCTURAL REGRESSION, FACTOR RELATIONSHIPS & THEORETICAL IMPLICATIONS

As previously reported, correlations amongst the factors did not fully express the nature of their interactions, rather just a view of their relationships with each other. Thus, the final step of the present study was to analyze the theoretical relationships amongst the 8 factors through a structural regression model, which are visualized in Figure 4.3 and

4.4. Specifically, the SR model shed light on how certain coping choices are related to self-regulation of weight loss behaviors. The theoretical pattern is visualized from left to right, stemming from a perceived discrepancy to more tangible coping behaviors.

Because Positive Reframing and Acceptance are chosen to manage affective states (Carver, Scheier & Weintraub, 1989; Folkman, 1997; Folkman & Moskowitz, 2000), this factor placed most proximal to the affective response stemming from the salient discrepancy. Either Monitor/Planning or Disengage/Denial were theorized next, which would have a relationship with the behavioral outcomes (i.e. PFC+, PFC−, Camo). It would have been theorized that Disengage/Denial coping responses might release individuals from any behavioral engagement, however the current results suggest this release is only true for PFC+ behaviors. In addition, disengaging from the situation as a coping mechanism may actually be related to unhealthy and/or camouflaging behaviors. Theoretically, Monitor/Planning is assumed here to be an approach-oriented response, thus should enhance use of behavior outcomes of choice. Enacting Disengagement/Denial was then theorized here to be an avoidance-oriented strategy, and should have an inhibitory relationship on behavioral outcomes.

Two major findings were supported here. First, although overlap with other discrepancies may exist, the present coping responses were specific to weight-related discrepancies, and not necessarily present in reference to other forms of discrepancy and associated dissatisfaction (e.g. general body image). Future research should take this specificity into account, as specific responses were shown to have opposite effects on weight loss behaviors.

Thus, as shown in the SR model, the second major finding was that coping choice had important implications on subsequent behavioral efforts. If positive forms of problem-focused coping are desired for weight loss (i.e. increased exercise, physical activity, or healthy eating), then the specific coping responses theoretically preceding these behavioral efforts are vital. Acceptance/Positive Reframing, Disengage/Denial and Monitor/Planning were all associated use of positive problem-focused coping in various ways. For example, choosing to cope through Acceptance/Positive Reframing was positively associated with the use of Disengage/Denial, which in turn was negatively related to the use of exercise and healthy eating to lose weight. On the other hand, choosing to cope initially with Monitor/Planning was positively associated with the use of exercise and healthy eating.

Such findings lend support to the Transactional Model of Stress and Coping and the Theory of Self-Regulation within the realm of weight-related dissatisfaction and behavior. With the difficulties in maintenance of weight and associated behaviors, the present findings hold important implications for future interventions and research in the areas of weight-related coping and self-regulation.

LIMITATIONS & FUTURE DIRECTIONS

A number of limitations of the present study should be noted, along with directions of future research. First, participants in the present study volunteered to complete the measures and may represent certain population characteristics that were not intended from the outset of the study. Specifically the average age of the respondent was

approximately 23 years of age with an average BMI of 23.54 $kg \cdot m^{-2}$. Thus, despite having a suitable range of 18-35 year olds and from all BMI categories, the present study was limited to a relatively homogenic sample of younger, normal weight, Caucasian individuals that either wanted to lose or maintain their current weight. Functioning and application of the WEIGHT-COPE should be explored in more heterogenic samples, and in a way that between group comparisons might be made to further our understanding of discrepancies, affective responses and possible differences in coping responses.

The present distribution by BMI does not fully mirror recent prevalence data of a similar 20-39 year-old population of women, which reports approximately 34% of the population as obese, 25.5% overweight, and 40.5% either normal weight or underweight (Flegal, Carroll, Ogden & Curtin, 2010). The present study reported 9% obese, 17% overweight, and 73% normal weight/underweight. Despite recruiting from a large population of all BMI categories, perhaps the voluntary nature of completing a survey about one's weight and concurrent feelings may have limited the overweight and obese women from actually completing the WEIGHT-COPE. Despite the present sample being relatively homogenic, Table 4.1 provides a picture of a sample of women that wanted to lose weight on average across all BMI categories, which was meaningful for the initial stages of WEIGHT-COPE development. However, future research should consider these difficulties in recruiting, alongside the lack of generalizability of the present study for those higher BMI women who have struggled with weight loss.

There were also no specific efforts to equalize ethnicity in recruitment beyond recruiting from areas that included a range of ethnicities (e.g. Caucasian, African

American, Asian, & Hispanic). Despite this effort, the majority of participants were White (67.7%). This limitation subsequently constrains the generalizability of results – especially as the relationship amongst coping strategies may be quite different across ethnicities. It is also likely that coping strategies may vary with cultural differences. As such, future research must directly test these possibilities prior to utilizing the WEIGHT-COPE in other populations.

Also, the measure administration occurred online, with the primary recruitment occurring through a University website. This left out potential participants who did not have access to the Internet. However, the users of web-based questionnaires were responsive and consistent with traditional methods within psychology (Gosling, Vazire, Srivastava, & John, 2004) and this was appropriate for the initial construction of a measure.

The instructions of the WEIGHT-COPE were worded in an effort to bring about a certain frame of mind in participants. Specifically, the goal of the instructions was to steer participants to think about their own moments where they may think about their weight. Examples of a more negative tone were utilized, such as seeing weight on a scale or hanging out with a thinner crowed. These examples were utilized, because they are reported as common moments for discrepancy during development stages. Thus, they were able to frame the direction of what moments the WEIGHT-COPE was aimed at assessing. Despite the examples being provided, no examples were provided on how these moments are reacted to or dealt with. Thus, the purpose was to set up a specific frame of mind and to direct to the purpose of the measure. However, in exchange for

such direction and specificity, these instructions may be a limitation to how the WEIGHT-COPE is used or within what frame of mind the participants are in at the beginning of the measure.

The wording of all items may limit the scope of coping responses to other related areas. Coping choices, though global at times, appear here to be specific to the situation. The present study sought to address this though targeting specific behaviors. However, in doing so, there may have been unintentionally missed items, or wording that did not capture the full scope of coping responses to weight-related discrepancy and associated dissatisfaction. Also, because the WEIGHT-COPE was designed specifically to measure coping responses to weight-related dissatisfaction, it may not be relevant to all body-related dissatisfactions and discrepancies. Also, these items were originally developed from interviews and discussion amongst weight loss program participants and weight loss clients seeking weight loss testing and prescription. The use of these specific populations may bias the item development to match their specific views. These views could vary by population sampled. However, the extended literature review provided support that these coping responses are also seen in previous literature.

There are also limitations within some of the factors that should be noted here. Specifically, as noted previously, the Acceptance/Positive Reframing factor included two separate constructs, which previous literature indicates has varied impacts on future coping efforts. These constructs may have correlated due to their similar design to regulate affect by enhancing positive feeling states. The initial items of this study only prepared two items each for acceptance and positive reframing. There was no *a priori*

hypothesis that these constructs would be so prevalent in this coping situation. Thus, a true understanding may have been limited due to the minimal items initially developed. Future research, including the WEIGHT-COPE, should consider adding more items for each construct, and determine if they may better operate as separate factors.

On a similar note, items for the Cutting Calories/Appetite Suppression factor were intentionally worded to separate unhealthy cutting/suppression of calories from limiting caloric intake due to more healthy food choices. Despite this effort, this factor was still modestly positively correlated with Healthy Eating factor. However, this may not be completely due to the wording, as there is indication that individuals may utilize healthy eating for coping responses also may be reducing caloric intake, suppressing their appetite, etc.

The WEIGHT-COPE is based on theoretical constructs that were validated by structural equation modeling, but only includes a minimal assessment of behavior, i.e. physical activity and eating behavior. There was no assessment of actual coping. Instead, the measure is dependent on participants relaying how likely they would be to perform the listed behaviors. The study was thus limited without a supportive measure of behavior, testing participants' claims of how they would cope. Also, the present study did not validate the finding with another sample. However, it did provide initial support for the WEIGHT-COPE, and future research should seek to further validate the measure in this

STRENGTHS

There are several strengths within the present study. First, the WEIGHT-COPE is the only measure able to capture the specific coping responses to perceived weight-related discrepancies. Future research should understand the importance of this specificity in coping, especially in the specific areas of body vs. weight discrepancies. Also, this study was the first coping measure to separate out the use of positive and negative forms of problem-focused coping. Weight loss behavior is unique, as individuals may pursue weight loss goals through both healthy and unhealthy means. Though both sets of behaviors may be defined as problem-focused, the implications on health are quite different. These findings are important for health educators and researchers intervening to enhance the use of more positive forms of weight loss behaviors. Thus, future research should be able to utilize the WEIGHT-COPE to test its predictability on weight-related coping behavior.

Also, as discussed within the findings of the structural regression model, the theoretical pattern of coping choices, which stem from a weight-related discrepancy and associated dissatisfaction, may impact the success of ongoing self-regulation of weight loss behavior. Future research may consider longitudinal designs to further examine the theoretical and temporal pattern of these coping choices. This regulation of the stressor holds important implications for future research trying to better understand the difficulties in weight loss and maintenance, as well as research wanting to explore coping responses in those individuals that may not need to actually lose weight. Successful regulation in response to these perceived discrepancies will vary in definition based on

the population and what the researcher would deem an appropriate response. Similarly, interventions may be developed to help guide improvement in coping choice, so that successful regulation of weight loss behaviors may continue.

Finally, though the initial 4-factor CFA did not converge with acceptable model fit, the present 8-factor structure provides a more detailed, perhaps strong view of weight-related coping responses. The specificity of coping previously described would have not been excavated if it were not for the lack of fit in the initial CFA. The EFA was not undertaken from the beginning, as a theoretical versus an empirical decision was made *a priori* to establish a factor structure, which supports use of a CFA. Though the CFA did explain the data as hypothesized, the WEIGHT-COPE remained true to the initial theoretical underpinnings. Thus, the WEIGHT-COPE supports theoretical predications provided by both the Transactional Model of Stress and Coping and the Theory of Self-Regulation. The greater detail and specificity of the WEIGHT-COPE enhances the implications of these theoretical models on future research.

CONCLUSIONS

The present research supports the reliability and validity of a measure that assesses how individuals across all weight categories, who were currently trying to lose or maintain weight, cope with perceived weight-related discrepancies. Utilizing Self-Regulation Theory and the Transactional Model of Stress and Coping as theoretical guides, the present exploratory factor analysis exhibited acceptable model fit for the WEIGHT-COPE, a 40-item measure with 8-factors. These 8-factors include two

problem-focused coping strategies deemed positive or "healthy" weight loss behaviors, Exercise/Physical Activity and Healthy Eating. Two factors were considered as negative or "unhealthy" weight loss behaviors, Cutting Calories/Appetite Suppression and Supplement use. One factor was considered as an outcome behavior, allowing individuals to camouflage or disguise their weight, Camo. One factor was considered here as an affect regulation factor stemming from a salient discrepancy, Acceptance/Positive Reframe. The final two factors were approach or avoidance type coping responses, thought to enhance or diminish future behavioral outputs, Monitor/Planning and Disengage/Denial.

All factors were related to numerous other measures of weight satisfaction, controllability, changeability, difficulty, efficacy, self-esteem, physical activity levels, current dietary intake and objectified body consciousness to provide initial support of its validity. The structural regression model provided an additional view of how these coping responses relate to one another within a larger framework of self-regulation (Figure 3.2). In short, the Acceptance/Positive Reframing was theorized to follow an affective response to a weight-related discrepancy, which was then positively associated with Disengage/Denial responses, but not Monitor/Planning. Disengage/Denial was associated with the use of negative forms of problem-focused coping (i.e. PFC–) and camouflaging behaviors (i.e. Camo), but was negatively associated with the use of positive or healthy forms of problem-focused coping (i.e. PFC+). On the other hand, the choice to increase the use of Monitor/Planning was positively associated with multiple forms of problem-focused coping. This structural regression model fits well into the

hypothesized larger self-regulation model of coping with weight-related dissatisfaction (Figure 3.3).

The WEIGHT-COPE is the first measure to be developed to capture coping responses to weight-related dissatisfaction, and to separate out positive vs. negative forms of problem-focused coping. Other coping measures are currently geared toward general coping responses or general body image, which are limited in capturing the specific coping behaviors associated with weight-related dissatisfaction and self-regulation. As seen with many of the WEIGHT-COPE items, coping responses can be very specific to the situation. As such, the WEIGHT-COPE was able to shed further light into coping specifically with weight-related discrepancy and associated dissatisfaction. This specificity is extremely important, as the initiation and maintenance of healthy weight loss behaviors is difficult.

Also, coping with common perceived discrepancies women face day-to-day can enhance or diminish one's ability self-regulate weight loss/maintenance behavior, which appears to occur across all body weight classifications. As shown in the present study, not only do individuals cope in different ways, but the strategies may also have different impacts on future behavior. However, there is opportunity for future interventions to better understand the coping response, the continuation in behavior, and whether not such coping is malleable to change. The WEIGHT-COPE could be an integral tool in these endeavors. The present findings of the WEIGHT-COPE measure reiterates variation in coping choice in the attempts to reduce a perceived weight-related discrepancy, and the impact these choices may have future self-regulation of weight-control behavior.

Appendix A: WEIGHT-COPE

Day to day we all have moments that make us think about our weight, body size or body fat levels. We may see our weight on a scale, try on a pair of old pants that are now too tight, hang out with a thinner crowd, or even have difficulty going up the stairs. Everyone deals with these moments differently.

Listed below are some common responses that people choose to deal with these moments. Using these responses, answer how likely you would respond. There are no wrong answers, and it does not matter how helpful or unhelpful your behaviors are. Do not answer on how you think you should react or how you wish you usually reacted. Just be completely truthful.

In general, when you feel overweight or fat how likely would you be to…

Not at All		Somewhat Likely		Likely		Definitely
1	2	3	4	5	6	7

1. Increase exercise efforts.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2. Find ways to suppress my appetite.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3. Turn to exercise or physical activity to take your mind off of things.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4. Eat to help yourself feel better again.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5. Reduce intake of sugary foods and drinks.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. Skip meals.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7. Try to monitor the behaviors that you think will help you lose weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8. Tell yourself “this isn’t real”.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9. Make an effort to avoid environments where you would overeat.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10. Try a liquid-based diet.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11. Make a special effort to appear thinner, so you can stay motivated.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12. Eat comfort foods.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13. Find ways to become more physically active.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14. Eat less than you probably should.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15. Try to come up with a strategy about what to do about your weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
16. Turn to work or activities, <u>other than</u> exercise & physical activity, to take your mind off of things.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
17. Become more careful about what you eat.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
18. Utilize cosmetic surgery.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

19. Seek a formal program (e.g. Weight Watchers, Nutrisystem) to help you lose weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
20. Wear loose clothing, so you do not have to think about your weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
21. Make healthier food choices.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
22. Use techniques to help lose water weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
23. Make a plan of action to lose weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
24. Pretend that it is not really happening.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
25. Try to eat less fat in your diet.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
26. Use supplements to help you control food cravings.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
27. Try to see it in a different light, to make it seem more positive.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
28. Seek comfort and understanding from someone.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
29. Try to lessen portion sizes.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
30. Try to ignore your hunger.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
31. Seek professional assistance for weight loss.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
32. Try to accept yourself as you are.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
33. Avoid sitting too much.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
34. Limit eating sweet, high-fat foods.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
35. Use weight loss supplements.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
36. Increase attempts to monitor your weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
37. Avoid whatever is making you feel overweight or fat.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

38. Eat less junk food.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
39. Use a “go to” diet.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
40. Set realistic weight loss goals for yourself.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
41. Use techniques that help you improve the shape of your body.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
42. Try to do more weight training.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
43. Exercise excessively.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
44. Look for something good in what is happening.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
45. Seek emotional support from others.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
46. Make sure not to over consume food.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
47. Seek quicker weight loss methods.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
48. Try to disguise or “cover up” your weight, until you can do something about it.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
49. Learn to live with your weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
50. Avoid attempts to lose weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
51. Limit how much fast food you eat.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
52. Smoke to help control your appetite.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
53. Try to do something to think about it less, such as exercising, walking, running, playing a sport, or going to the gym.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
54. Give up trying to deal with your weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
55. Eat more fruit & vegetables.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

56. Take laxatives to help you lose weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
57. Try not to think about it.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
58. Realize you brought the problem on yourself.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
59. Take medication to help you lose weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
60. Seek help on how to lose weight.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
61. Start tracking and monitoring your calories.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
62. Do something to think about your weight less, such as going to the movies, watching TV, getting on the computer, reading, daydreaming, sleeping or shopping.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
63. Try to ignore the situation and your feelings.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
64. Go to the gym.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
65. Drink a lot of water.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
66. Drink fewer alcoholic beverages.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
67. Fast or go without food entirely.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
68. Make a promise to yourself that things will be different the next time.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
69. Do nothing.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
70. Use home exercise equipment.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
71. Make efforts to hide or disguise your weight, so you do not have to think about it.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
72. Try to distract others from my weight by highlighting my other positive attributes (e.g. face, smile, breasts, hair, etc).	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Appendix B: Global Physical Activity Questionnaire

Physical Activity			
Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person. Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. *[Insert other examples if needed].* In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.			
Questions		**Response**	**Code**
Activity at work			
1	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *[carrying or lifting heavy loads, digging or construction work*] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 4*	P1
2	In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌊__⌋	P2
3	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P3 (a-b)
4	Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking *[or carrying light loads*] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 7*	P4
5	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌊__⌋	P5
6	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P6 (a-b)
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. [insert other examples if needed]			
7	Do you walk or use a bicycle (*pedal cycle*) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2 *If No, go to P 10*	P7
8	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days ⌊__⌋	P8
9	How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P9 (a-b)
Recreational activities			
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure), [insert relevant terms].			
10	Do you do any vigorous-intensity sports, fitness or recreational (*leisure*) activities that cause large increases in breathing or heart rate like [*running or football,]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 13*	P10
11	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (*leisure*) activities?	Number of days ⌊__⌋	P11
12	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P12 (a-b)

Physical Activity (recreational activities) contd.			
Questions		**Response**	**Code**
13	Do you do any moderate-intensity sports, fitness or recreational *(leisure*) activities that causes a small increase in breathing or heart rate such as brisk walking,(*cycling, swimming, volleyball*)for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P16*	P13
14	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (*leisure*) activities?	Number of days ⌊__⌋	P14
15	How much time do you spend doing moderate-intensity sports, fitness or recreational (*leisure*) activities on a typical day?	Hours : minutes ⌊__⌋ : ⌊__⌋ hrs mins	P15 (a-b)
Sedentary behaviour			
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent [sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television], but do not include time spent sleeping. *[INSERT EXAMPLES] (USE SHOWCARD)*			
16	How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⌊__⌋ : ⌊__⌋ hrs min s	P16 (a-b)

Appendix C: Dietary Intake

Over the past week how many times did you eat or drink the following? If you did not consume the food that is listed, please put a "0" for your response.

1. Fruit, such as apple, avocado, banana, blueberries, cherries, coconut, cranberries, dates, grapes, grapefruit, mango, orange, peach raspberries, strawberries, etc.
Count fresh, frozen, or canned fruit. Do not count juices. _____

2. Lettuce or green leafy salad, with or without other vegetables. _____

3. Other vegetables, such as broccoli, cabbage, carrots, collard/mustard greens, corn, eggplant, okra, onion, peas, peppers, spinach, squash, sweet potato, tomato, etc.
Count raw, cooked, canned or frozen.
Do not count lettuce salads, white potatoes, cooked dried beans or rice. _____

4. Fruit juices such as Kool-Aid, lemonade, Hi-C, Tang, and fruit juices from concentrate. _____

5. Regular fat potato chips, tortilla chips, or corn chips.
Do not include low-fat chips. _____

6. French fries, home fries, or hash brown potatoes. _____

7. Bacon, sausage or beef, not including low fat, light, or turkey varieties. _____

8. Hot dogs made of beef or pork. _____

9. Fast food or restaurant hamburgers or cheeseburgers. _____

10. Other fast food, not including salads, low fat or "healthy options". _____

11. Whole milk, either to drink or on cereal. _____

12. Sweet foods, such as candy, pies, cakes, cookies, ice cream, doughnuts or muffins. _____

13. Cheese, not including low-fat or non-fat. _____

14. Sodas, not including diet, light or artificial sweetened beverages. _____

15. Pizza. Include delivery, frozen or in-restaurant. _____

Appendix D: Objectified Body Consciousness Scale

(McKinley & Hyde, 1996)

	Strongly Disagree					**Strongly Agree**
Surveillance						
1. I rarely think about how I look.*	1	2	3	4	5	6
2. I think it is more important that my clothes are comfortable than whether they look good on me.*	1	2	3	4	5	6
3. I think more about how my body feels than how my body looks.*	1	2	3	4	5	6
4. I rarely compare how I look with how other people look.*	1	2	3	4	5	6
5. During the day, I think about how I look many times.	1	2	3	4	5	6
6. I often worry about whether the clothes I am wearing make me look good.	1	2	3	4	5	6
7. I rarely worry about how I look to other people.*	1	2	3	4	5	6
8. I am more concerned with what my body can do than how it looks.*	1	2	3	4	5	6
Body Shame						
9. When I can't control my weight, I feel like something must be wrong with me.	1	2	3	4	5	6
10. I feel ashamed of myself when I haven't made the effort to look my best.	1	2	3	4	5	6
11. I feel like I must be a bad person when I don't look as good as I could.	1	2	3	4	5	6
12. I would be ashamed for people to know what I really weigh.	1	2	3	4	5	6
13. I never worry that something is wrong with me when I am not exercising as much as I should.*	1	2	3	4	5	6

14. When I'm not exercising enough, I question whether I am a good enough person.	1	2	3	4	5	6
15. Even when I can't control my weight I think I'm an okay person.*	1	2	3	4	5	6
16. When I'm not the size I think I should be, I feel ashamed.	1	2	3	4	5	6

Control Beliefs

17. I think a person is pretty much stuck with the looks they are born with.*	1	2	3	4	5	6
18. A large part of being in shape is having that kind of body in the first place.*	1	2	3	4	5	6
19. I think a person can look pretty much how they want to it they are willing to work at it.	1	2	3	4	5	6
20. I really don't think I have much control over how my body looks.*	1	2	3	4	5	6
21. I think a person's weight is mostly determined by the genes they are born with.*	1	2	3	4	5	6
22. It doesn't matter how hard I try to change my weight, it's probably always going to be about the same.*	1	2	3	4	5	6
23. I can weight what I'm supposed to when I try hard enough.	1	2	3	4	5	6
24. The shape you are in depends mostly on your genes.*	1	2	3	4	5	6

* = *reverse* scored

Appendix E: Social Physique Anxiety

(Martin, Rejeski, Leary, McAuley, & Bane, 1997)

Not at all characteristic of me	Slightly characteristic of me	Moderately characteristic of me	Very characteristic of me	Extremely characteristic of me
1	**2**	**3**	**4**	**5**

1. I wish I wasn't so up-tight about my physique or figure.	**1**	**2**	**3**	**4**	**5**
2. There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.	**1**	**2**	**3**	**4**	**5**
3. Unattractive features of my physique or figure make me nervous in certain social settings.	**1**	**2**	**3**	**4**	**5**
4. In the presence of others I feel apprehensive about my physique or figure.	**1**	**2**	**3**	**4**	**5**
5. I am comfortable with how fit my body appears to others.*	**1**	**2**	**3**	**4**	**5**
6. It would make me uncomfortable to know others were evaluating my physique or figure.	**1**	**2**	**3**	**4**	**5**
7. When it comes to displaying my physique or figure to others, I am a shy person.	**1**	**2**	**3**	**4**	**5**
8. I usually feel relaxed when it's obvious that other are looking at my physique or figure.*	**1**	**2**	**3**	**4**	**5**
9. When in a bathing suit, I often feel nervous about how well-proportioned my body is.	**1**	**2**	**3**	**4**	**5**

* = *reverse scored*

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